

Number plate

When we want to find the number of combinations it is most common to use multiplication, that is what I have done with every mathematical assignment i chose. I'm gonna start with the number plate. The first thing I want to do is to see how many combinations I get if I only change the letters and not the numbers. There are 29 letters in the norwegian alphabet, but number plates don't use Æ, Ø or Å. Because of that we now have 26 letters. We can have 26 different letters in each slot, and there are two slots for letters in each number plate. So the number of combinations is 26 squared, because there are two slots with 26 possibilities in each slot. After this, I have to find how many ways I can combine the numbers. Our number system has 10 different digits (0-9) and there are five slots for digits in a number plate. Have you ever seen a number plate that starts with 0? Me neither, so we take away number 0 in our system and that gives us 9 different digits. I have to multiply 26 squared with 9 and multiply that again with 10 to the power of four, because there are now four slots left on the number plate.

Code lock

The next assignment is about a code lock. As you can see on this code lock four of the digits are worn out, meaning these are the digits that are in use in this lock. The code says I can only use four different digits - 2, 4, 5 and 9. If the first digit is 2, we can continue with the code with 459, 495, with 4 as the next digit I just change places with the two last digits. The same if the next digit is 5 or 9. We can continue this if we change the first digit to for example 5, if we start with 5 we can do the exact same thing if we change every number 5 from the other examples to 2 in this case. This gives me 6 different combinations for each digit we start with, and there are 4 different digits. That means we can multiply 6 by 4, which is 24, so there are 24 different combinations if we have 4 different numbers to a 4 digit code.

We could also explain it like this: To place 4 digits in 4 slots is equivalent to placing 4 people in 4 chairs. The first person can choose between 4 different chairs, now the first person has gotten a seat the next only have 3 chairs to pick between, the next have 2 and the last one has 1. So the number of possibilities isn $4 \cdot 3 \cdot 2 \cdot 1$ which is 24. We call this 4 factorial.

Making videos in mathematics

Personally, I prefer only writing on paper and solving the problem, and giving that to the teacher, instead of making a movie of what i did. The reason is that when i write on paper I know how to solve it. The teacher told me how to do it, so I'm doing exactly what he said I had to do, even though i know the answers.

When i have to make a movie I also have to explain how I did everything, and why I did it, and how I solved the mathematical problem. This is often more demanding than just solving the problem.

There is a difference between solving a problem and explain how I did it.

Don't get me wrong! It's a good idea to make videos, it teaches you how to explain a mathematical problem. And the reason i prefer only writing on paper is because i don't think i'm the best at explaining a problem.