Why Counting

To whet your appetite, we start by stating a few counting problems. In the following lessons, we will introduce the basic combinatorial toolbox and solve these problems together.

Problem. A license plate in Portugal contains a block of two letters followed by a block of two digits followed by another block of two letters. What is the number of license plates?

Problem. You are creating an account at a web service. The service asks you to set up a strong password:

- it must contain either eight or nine symbols;

- each symbol must be either a Latin letter (lower or upper case) or a digit;

- it must contain at least one digit.

For example, *A2Jp5eLJg*, *7m5a5th6*, and *discr7ete* are strong passwords, whereas *qwertyui*, *math17*, *discr-ete*, and *ghBTrehY* are not. What is the number of strong passwords?

✓ **Completed**

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