Grade 8

Problem №1.

Find the smallest five-digit number that is divisible by each of its digits, if none of the digits are repeated.

Problem №2.

When visiting Planet Xenon, we noticed that the national inhabitants had a system of numeration identical in structure to ours except they used only the following digits:

0, 1, 2, 3, 4, 5, 6, 7

Which means, their 10 is our 8, their 11 is our 9, and so on… How could they represent our 100 in their system?

Problem №3.

The regular price of a 500-gram pack of sausages is 2 dollars and 45 cents. However, as a holiday special, the local discount store offers a "*buy 5 get 2 free*" deal on these 500-gram packs of sausages.

If Mr. Smithfield needs 15 of these 500-gram packs of sausages, how much can he expect to pay **in total**?

(Note: 1 dollar is equivalent to 100 cents.)

Problem №4.

Find the greatest multiple of 3 that can be formed using one or more of the digits 2, 4, 5 and 8, using each digit only once.
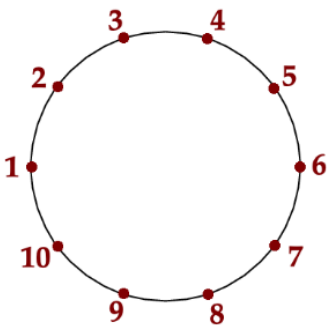
Problem №5.

I am thinking of a number less than 50. My number is 3 more than a multiple of 4, 4 more than a multiple of 5, and 5 more than a multiple of 3. How many possibilities are there for my number?

Problem №6.

A chord of a circle is a straight-line segment whose endpoints both lie on the circle.

Ten points are spaced equally around a circle. How many **different chords** can be formed by joining any two of these points?

Problem №7.

Find the value of $A + B + C$ if

$$A + 2B = 92$$
$$3A + C = 126$$
$$2B + 3C = 170$$

Problem №8.

The year 2019 has two interesting properties:

- None of its digits are repeated.
- The sum of the first three digits is less than the last digit.

These two properties were also true for the year 2018, 2017, 2016, 2015, and 2014.

In which year did this happen again the last time, before the year 2014?