*For each problem the recommended grades are specified in the parentheses (a student is allowed to solve the problems for older grades; if a student solves a problem intended for younger grades, the solution will be ignored).*

Task 1. (6–7)
Sasha and Ilya were to run 600 meters. But Sasha was running the first half of the *time* and the second half of the time he was walking. Ilya was running first half of the *distance* and he was walking the second half of the distance. Both boys started and made the finish at the same time. They both walked at a speed of 5 km per hour. What was Ilya's running speed if Sasha was running at 10 km per hour?

Task 2. (6–7)
Cut the figure in the picture into 4 pieces of equal *perimeter* so that any two pieces are *not* equal.
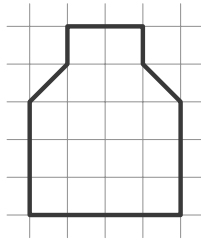

Task 3. (6–8)
After a soccer game of 10 by 10 players between a team of liars (those who always lie) and the truth-seekers (those who always tell the truth) each player was asked: "How many goals have you scored?" Some participants answered "one", Misha said "two", some answered "three" and all the rest said "five". Does Misha lie if the truth-seekers won and the final score was 20 : 17?

Task 4. (8–9)
In the Noname family it is customary to calculate the age of the family, i.e. the sum of the age (number of complete years) of the father, the mother and all of the children. On the 31st of December the Noname family celebrate their family's birthday. The year the youngest child Dasha was born, the family was 101 years old. After several years they were 150 years old. How many children are there in the Noname family?

Task 5. (8–11)
Lyosha drew a geometric picture outlining his plastic rectangular triangle for 4 times, placing the short leg (cathetus) to the hypotenuse and superimposing the vertex of the acute angle with the vertex of the right angle (see the pic.). It turns out that the "closing" fifth triangle is isosceles (see the pic., the marked (!) sides are equal). Find the size of the angles of Lyosha's triangle.
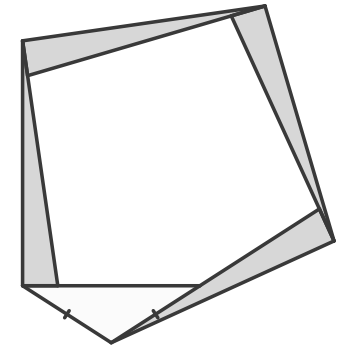
Task 6. (9–11)
There are 28 students in the class. For the programming course, they are divided into 3 groups. For English course they are also divided into 3 groups but in a different way. And during the PE lessons they are divided into 3 groups in some other third way. Prove that there are at least two students who study programming, English and PE together in the same group.

Task 7. (10–11)
A few powers of two are written in some order on the blackboard. For every pair of neighbor numbers Petya has written down in the notebook the power to which the left number should be raised, so that the result would be equal to the right one. The first number in the row on the blackboard is 2 and the last one is 1024. Vasya says it's enough to find the product of all the numbers in the notebook. Is Vasya right?

Task 8. (11)
Is there a triangular pyramid among six edges of which
a) two edges have the length of less than 1 cm, and the other four edges — more than 1 km?
b) four edges have the length of less than 1 cm, and the other two edges — more than 1 km?
(*The task is not considered to be solved, if only (a) or only (b) is solved.*)

Don't forget to **sign** your work (please, write the card number, your last name, school and grade) before **submitting** the work. You do not have to submit the sheet with the tasks. The tasks, their solutions and the results of the competition will be published at *http://turlom.olimpiada.ru* after November 20.