# Junior Circle: Welcome Back!
# Problems from Russian Olympiads

October 4, 2015

1. $240$ students from Moscow and St. Petersburg attended a math camp.

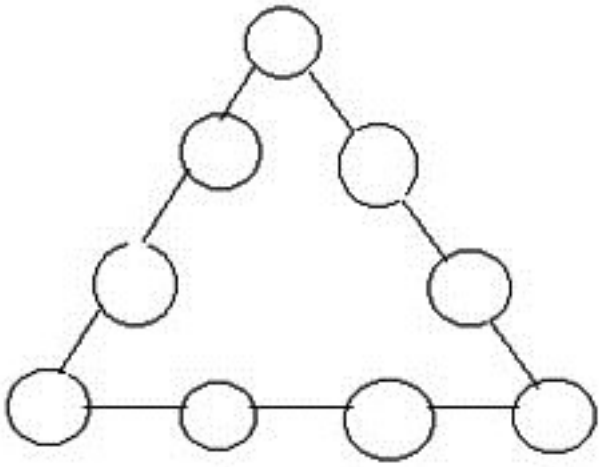
   - Of the total number of students, $125$ were boys.
   - $65$ boys were from Moscow.
   - There were $53$ girls from St. Petersburg.

   How many students came from Moscow?

2. Two bike riders are riding on the same bike trail. Biker 1 has a speed of $12 km/hr$ and biker 2 has a speed of $15 km/hr$. At noon, the distance between them is $35 km$. What will the distance between them be at 2:00pm?

3. Maria caught the flu from one of her classmates and decided to go to the doctor. The doctor gave her 3 pills and told her to take a medication every half an hour. If she took the first pill at 1:00pm, at what time will she take the last one?

4. Put numbers 1, 2, 3, ..., 8, 9 into the circles so that the sum of numbers along each side of the triangle is equal to 19.



5. Find the sides of a rectangle with the following conditions:
   - the area is $12cm^2$
   - the perimeter is $26cm$

6. Place parentheses into the following expression so that the statement is true.

$$1\ 5 - 3\ 5 + 5 \div 4 = 5$$

7. The city of Moscow was founded in 1147. How old is Moscow today?

8. The sum of two numbers is 715. The first number ends in a zero. If you erase this 0, you have the second number.

   What are the two numbers?

9. The age of Peter's great grandfather is the smallest three digit number written with three different digits. How old is Peter's great grandfather?

10. Peter drives from Moscow to St. Petersburg with a speed of $50 km/hr$. Victor drives from St. Petersburg to Moscow with a speed of $70 km/hr$. What is the distance between Peter and Victor two hours before they pass each other?

11. Find all possible solutions for the equation:

    $12 \div x = 7 - x$

12. Katya took a piece of wire and began to bend it into different shapes. When she bent it into a square, the sides were $6 cm$. After, she made a triangle with all sides equal to each other out of the same piece of wire.

    What is the length of the sides of the triangle?

13. Second graders are planting trees along the side of the school garden. They are told that they need to plant the trees 3 meters apart. The length of this side of the school garden is 30 meters.

    If they want to maximize the number of trees in the garden, how many saplings (young trees) should they prepare?

14. How many hundreds do you get when you multiply two hundred by three hundred? (Hint: Try not to actually multiply the two, think logically)