Green Level

1. (5 credits) First three terms of the arithmetic progression are arranged in a line. The same digits are replaced with the same letters, different digits are replaced with different letters. The result of the replacement is A BC AAA. Which digit was replaced by the letter C?

2. (6 credits) Professor Zero jetted off to the conference to Toronto from Moscow. His aircraft left Moscow at 06.35PM and arrived to Toronto on the next day at 10:20AM (the time of departure and the time of arrival are local). When it was 2 o'clock in the morning in Moscow, it was 7 o'clock in the previous evening in Toronto. How long did the professor's flight last?

3. (6 credits) Six members of the team were solving 9 problems. 2 hours later they found that each member solved 2 problems, and each problem solved by them was solved by three members. How many problems were not solved by the team?

4. (8 credits) Five consecutive terms of the arithmetic progression with difference 6 are prime numbers (i.e. they have no positive divisors other than 1 and itself). What is the smallest term of that progression?

5. (10 credits) Trading in shares is opened every day at 10.00AM on the Stock Exchange in New Vasyuki. On the morning of January 1, 201N, the cost of each share of the companies "Vasya Inc." and "Petya and Co" was one ruble and two rubles respectively. On December 31 of the same year, post-trading prices for the shares became the same again. Lyosha found that the prices for the shares of those companies were always different, they changed every day, but the cost of each share was either one ruble or two rubles in any case. How many days were in February that year?

6. (10 credits) 37 inhabitants of the island of knights and liars sat in the room. At some point, one offended inhabitant left the room. One of the remaining inhabitants followed him with his eyes and remarked, "The one who left the room is a liar!" Then he got up and left the room, too. The second one said, "Both those who left the room are liars!" and left the room as well. Then the remaining inhabitants said one after another, "All those who left the room are liars!" and left the room. Then the last inhabitant remaining in the room stated sadly, "Yes, all those who left the room are liars." How many liars were in the room originally? (Liars always lie, and knights always tell the truth)

7. (10 credits) In McDonald's, the middle set of 3 hamburgers, 5 milk shakes and 1 pack of French fries costs 235 rubles, and the large set of 5 hamburgers, 9 milk shakes and 1 pack of French fries costs 395 rubles. How much does the small set of 2 hamburgers, 2 milk shakes and 2 packs of French fries cost there if all prices are determined correctly and without discounts?

8. (13 credits) Masha wrote four consecutive natural numbers on the board. Lyosha divided each of them by 10 and erased all digits after the decimal point. The sum of the new numbers written on the board was 2017. Which numbers were originally written by Masha?

9. (15 credits) Winnie-the-Pooh had a 3×4 grid rectangle. He folded it several times along the grid lines and got a 1x1 square. Then Winnie-the-Pooh cut the received square package along both diagonals. How many parts did Winnie-the-Pooh get from the original rectangle?

10. (17 credits) Petya tries to find grid rectangles, diagonals of which cross exactly 17 squares. He has already found 1×17 and 17×17 rectangles. How many more such rectangles can he find? (a×b and b×a rectangles are assumed to be identical)