TR iKS **ko**

Úloha 1. *An acute isosceles triangle ABC ($AB = AC$) is inscribed in a circle with center O. Rays BO and CO intersect the sides AC and AB at B' and C', respectively. A straight line ℓ parallel to AC is drawn through C'. Prove that ℓ is tangent to the circumcircle of triangle $B'OC$.*

Úloha 2. *Each cell of a 100×100 board is painted either black or white such that all the cells adjacent to the border of the board are black. It turned out that no 2×2 square of the board is one-colored. Prove that there exists a 2×2 square with two diagonally touching black squares and two diagonally touching white squares.*

Úloha 3. *Initially, a positive integer n is written on the board. At any moment, Misha can choose any number $a > 1$ on the board, erase it, and write on the board all the divisors of a, except for a itself (the same number can appear multiple times on the board). After a while it turned out that n^2 numbers were written on the board. Find all n for which this could have happened.*