

XI Caucasus Mathematic Olympiad

Maykop, March 13–18, 2026 year



Juniors. Day 2, March 15

Caucasus
Mathematical
Olympiad | Кавказская
математическая
олимпиада

5. Find the largest positive integer consisting of distinct non-zero digits such that for any two of its neighboring digits their product is a composite number.

6. Masha wrote down 2026 different positive real numbers in a notebook. She considers the pair of numbers a, b written in the notebook to be *good* if the number $\frac{2026-ab}{a+b}$ is equal to one of the remaining 2024 numbers. Determine if it is possible that among all the pairs of initial numbers there are exactly 2026 good pairs.

7. In an 8×8 grid square all 81 grid points were marked. Igor connected some pairs of marked points with line segments to form an 81-gon. Prove that there exists a cell whose center lies on the boundary of this 81-gon.

8. A regular 111-gon with side length 1 is given. Prove that there are 2 diagonals whose lengths differ by 1.

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