MATHEMATTIC

No. 70

The problems featured in this section are intended for students at the secondary school level.

> ***Click here to submit solutions, comments and generalizations to any problem in this section.***

To facilitate their consideration, solutions should be received by **February 15, 2026**.

⬦⬦⬦⬦⬦⬦

MA346.   Find the primes p, q, r, given that one of the numbers pqr and $p + q + r$ is 101 times the other.

MA347.   There are 20 sweets on a table. A game consists of two players taking turns to choose some sweets. On each move, a player must choose at least one sweet but never more than half of what remains. The loser is the one who has no valid move. How many sweets should the first player choose on the opening move to ensure that they may always win the game? Justify your answer.

MA348.   Find all positive integers $n < 200$ such that $n^2 + (n+1)^2$ is a perfect square.

MA349.   Let $ABCD$ be a regular tetrahedron whose edges are of length 6. Let E be the mid-point of CD so that $|CE| = |ED|$ and let F be a point on BE such that $AF \perp BE$. Find $|AF|$.

MA350.   For a given arithmetic sequence, the ratio of the sum of the first m terms to the sum of the first n terms is $m^2 : n^2$. Find, in simplest form, the ratio of the mth term to the nth term in terms of m and n, where $m \neq n$.

· ·