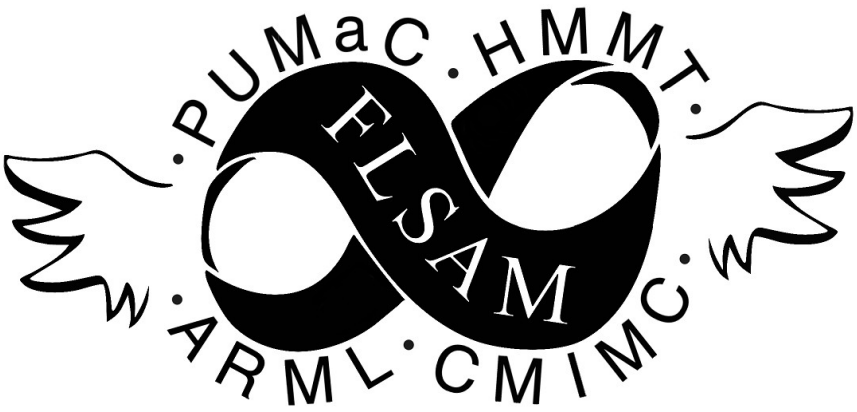
Florida Student Association of Mathematics



2026 FLSAM PUMaC Tryout

October 10 – 11, 2026

Round 4: Number Theory

Welcome to the **2026 FLSAM PUMaC Tryout!** This is round four of four, each of which will consist of four problems to be completed in 30 minutes. There is no penalty for wrong answers. Good luck!

Answer Format:
All answers must be **fully simplified**. Restrictions include but are not limited to fully reduced fractions, rationalizing denominators, and fully simplifying radicals. All reasonable fully simplified forms will be accepted in the case that multiple exist.

1. A positive integer n is such that $\frac{n}{24}$ has 36 positive integer divisors and $\frac{n}{36}$ has 24 positive integers divisors. Compute the number of positive integers divisors of n.

2. Compute the *third* smallest positive integer N for which

- N has two divisors with units digit 7,
- N has four divisors with units digit 4, and
- N has eight divisors with units digit 0.

3. Compute the number of ordered triplets (a, b, c) of positive integers with $a, b, c \leq 40$ such that

$$\gcd(a, b, c)\,\mathrm{lcm}(a, b, c) = \frac{ab + bc + ca}{10}.$$

4. Jerry draws some of the lines of symmetry of a regular 12-gon, and Jacob draws all 12 of them. In either drawing, a token placed anywhere in the plane may be moved, any number of times, to its reflection across any drawn line. Compute the number of choices of Jerry's lines such that, for every point P, a token starting at P can reach exactly the same points in Jerry's drawing as in Jacob's.

Q1	Q2	Q3	Q4