NMU Math & CS Department

Problem of the Month, September 2024

Here we have two problems to kick-off the 2024/2025 Problem of the Month season! Formal submission for this month's challenge requires a solution to both problems below. See next page for rules and information.

PROBLEM 1

Notice that the number 15 admits three sets of two or more consecutive integers that sum to it, namely the three sets $\{7, 8\}$, $\{4, 5, 6\}$, and $\{1, 2, 3, 4, 5\}$.

Determine the number of sets of two or more consecutive integers that sum to 1000. Explain your work.

PROBLEM 2

Show that there must be a positive whole number n with the property $2024^{2023} < 2023^n < 2024^{2024}$.

The NMU Mathematics and Computer Science Department invites you to participate in the 2024/2025 Problem of the Month contest to have some fun and get a little recognition. There are paper copies of the problems available at the department front desk if you'd like.

Rules: Anyone is welcome to submit a solution, and all correct solutions will be recognized; but only undergraduates enrolled in coursework at NMU are eligible to win the prize at the end of the year. The first student to submit a correct solution is the winner of the month. The top problem solver for the academic year will receive a fabulous prize, and be recognized at the department year-end celebration. You must write clear and complete solutions to the problems. You must include your name, NMU IN, address, phone, email, and exact date/time of your submission. You may either submit in person at the department front desk (use a staple if there are multiple pages), or email your solution in `pdf` format to `darowe@nmu.edu`.