2025 SSMO Relay Round 3

SMO Team

RR 3 Part 1: Michael, Nico, and Jackson are splitting a 100 dollar bill. Michael's favorite number is 3, so he insists on paying a positive amount of dollars that is a multiple of 3. Nico and Jackson are both scared of even numbers, so they each insist on paying an odd number of dollars. In how many ways can they pay the bill?

RR 3 Part 2: Let $T = TNYWR$. In triangle ABC, angle C is a right angle. If the median from C has length T, find the maximum possible area of triangle ABC.

RR 3 Part 3: Let $T = TNYWR$. The numbers 1 and 2 are written on a board. Every second, if the numbers currently on the board are x and y, the number $x + y$ is written, and one of x or y is erased. After a finite number of seconds, the larger number on the board is $\left\lfloor \sqrt{T} \right\rfloor$. How many possible values can the smaller number take?