Largest value: What is the largest possible value of $t_1 \cdot t_2 \cdot t_3 \cdots t_n$ where $t_1 + t_2 + t_3 + \cdots + t_n = 100$ and t_i is a positive integer?

- Please **Submit** your solution to
  - *Dr. Erol Akbas,* eakbas@gsu.edu or
  - *Dr. Tirtha Timsina,* ttimsina@gsu.edu

  before the deadline: **Tuesday, January 31th, 7:00PM.**
- The WINNER will be awarded with a $25 gift certificate and will be announced in the NEXT issue.

Problem of the last month:

Rational Point: Show that in the xy-plane, for odd integers **A**, **B** and **C**, the line $Ax + By + C = 0$ does not intersect the parabola $y = x^2$ in a rational point.

Proof: By a contradiction, suppose that for odd integers A, B and C, the line $Ax + By + C = 0$ intersects the parabola $y = x^2$ in a rational point $(\frac{p}{q}, \frac{p^2}{q^2})$ where p, q are relatively prime $\Rightarrow Apq + Bp^2 + Cq^2 = 0$

Case 1: p is even, q is odd $\Rightarrow Apq + Bp^2$ is even and Cq^2 is odd. Therefore $Apq + Bp^2 + Cq^2$ cannot be zero.

Case 2: p is odd, q is even $\Rightarrow Apq + Bp^2 + Cq^2$ cannot be zero by a similar argument in **Case 1**.

Case 3: p , q are both odd $\Rightarrow Apq$, Bp^2 and Cq^2 are all odd and sum of three odd integers cannot be zero.

Winner: Daniel Balena

Participants with correct solutions: Daniel Balena, Wenyan Zhou, John Hull

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