

CHSMO November Mini

C.H.M.C

Rules and Regulations

1. Contestants are not allowed to communicate with any other person during the contest.
2. Using a calculator is strictly prohibited.
3. Using AI or other tools and digital software is also strictly prohibited.
4. Do the contests fairly, cheating is strictly prohibited.

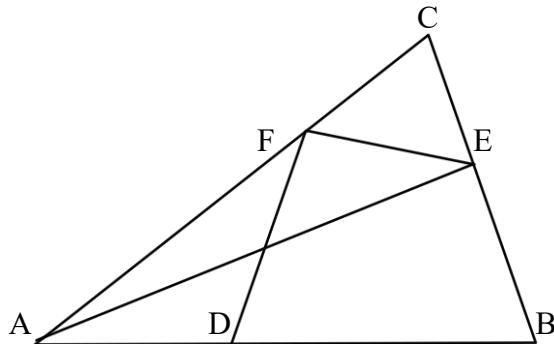
PART A

1. What is the smallest value of n , which is greater than 2025, such that when

$$2026^1 + 2026^2 + \cdots + 2026^n$$

Is divided by 5, the remainder is 3?

2. Let there be real numbers x, y , such that $|x| + x + 5y = 2$ and $|y| - y + x = 7$. Hence find the value of $x + y$
3. The area of the triangle ΔABC is 50 units squared. Let $AD = 3$, and let $DB = 6$, with the area of ΔAFB is equal to the area of ΔBCF , and the area of ΔAFD is equal to the area of ΔFDE . Hence find the area of ΔABC .



4. Let S , be defined as the following

$$S = \left\{ \frac{1}{2025}, \frac{2}{2025}, \frac{3}{2025}, \dots, \frac{2025}{2025} \right\}$$

A fraction is called *CHMC*, if it can be reduced, for example $\frac{2025}{2025}$ can be reduced to 1, and $\frac{3}{2025}$ can be reduced to $\frac{1}{675}$. Hence if the positive difference between the *non-CHMC* fractions and *CHMC* fraction can be expressed as $\frac{m}{n}$, find $m + n$.