i think we should keep the title since
thats the theme (lets leave this in YAY!

# [redacted]ror Lit[redacted]ered Ma[redacted]h Oly[redacted]piad

27th ELMO
PITTSBURGH, PA

Year: 2025

Day: 2

*June 14, 2025*
*12:30PM-5:00PM CDT*

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OK
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OK

Error Checking (Windows (C:))
Repair this drive
Windows found errors on this drive that need to be repaired.
Close this dialog box, and then repair the drive.

...itive integer and $p$ be a prime. Over all integer-coefficient polynomials $P(x)$ with an $x^n$ coefficient of 1, find the largest power of $p$ that can divide $P(x)$ for all integers $x$.

あるコンテストに2025問の問題があります。エルモは最初、答えが1、2、...、2025と順番に並んでいることを知っています。エルモは1分ごとに、まだ正解していない問題を1つ選び、解答を入力すると、正解か不正解かが通知されます。エルモがコンテストに勝つには、2025問すべてにそれぞれ最大2024回の試行で正解しなければなりません。エルモはコンテストに勝つことを保証できますか？

Let $\mathbb{Z}_{>0}$ denote the set of positive integers. Fin[redacted]tions $f\colon \mathbb{Z}_{>0} \to \mathbb{Z}_{>0}$ such that for all positive integers $m$ and $n$

ERROR

YAY! + HI JA

YAY

NO WHY DELETE.

SPAM

)

Build Output

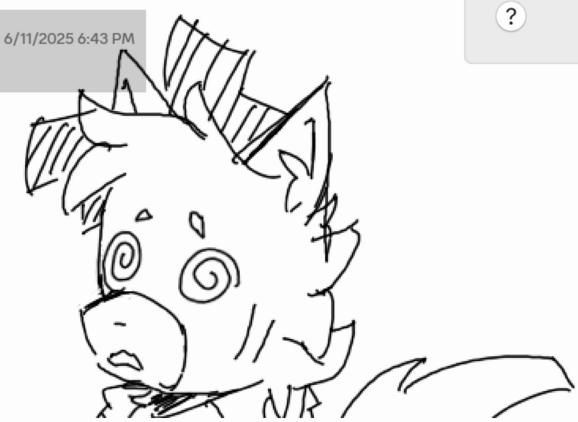
```
pdflatex>
pdflatex> ! Misplaced \cr.
pdflatex> <inserted text> \cr
pdflatex>
pdflatex> l.16 \end{frame}
pdflatex>
pdflatex> ! Missing \cr inserted.
pdflatex> <inserted text>
pdflatex>                 \cr
pdflatex> l.16 \end{frame}
pdflatex>
pdflatex> (That makes 100 errors; please try again.)
pdflatex> !  ==> Fatal error occurred, no output PDF file produced!
pdflatex> Transcript written on deneme2.log.

LaTeX-Result: 101 Error(s), 0 Warning(s), 0 Bad Box(es), 0 Page(s)
```

**Your computer was restarted because of a problem.**

Click Report to see more detailed information and send a report to Apple.

? Ignore Report...

||potatoes|| 6/11/2025 6:43 PM
YAEH! YAY.



10

*Time limit: 4 hours 30 minutes.*
*Each problem is worth 7 points.*

# Error Littered Math Olympiad

**27th ELSMO**
Aurora, IL

Year: **2025**

Day: **1**

*June 14, 2025*
*12:30PM-5:00PM CDT*

**Problem 1.** Let $\mathbb{Z}_{>0}$ denote the set of positive integers. Find all functions $f\colon \mathbb{Z}_{>0} \to \mathbb{Z}_{>0}$ such that for all positive integers $m$ and $n$,

$$f^m(n) + f(mn) = f(m)f(n).$$

**Problem 2.** A contest has 2025 problems. Elmo initially knows that the answers are 1, 2, ..., 2025 in some order. Every minute, Elmo selects a problem that has not been answered correctly, inputs an answer to it, and is told whether the answer is correct or incorrect. Elmo wins the contest if and only if he answers all 2025 problems correctly in at most 2024 attempts each. Can Elmo guarantee that he wins the contest?

**Problem 3.** Let $n$ be a positive integer and $p$ be a prime. Over all integer-coefficient polynomials $P(x)$ with an $x^n$ coefficient of 1, find the largest power of $p$ that can divide $P(x)$ for all integers $x$.

*Time limit: 10 minutes.*
*Each problem is worth 0 points.*

# Error Littered Math Olympiad

**27th ELSMO**
AURORA, IL

Year: **2025**

Day: **2**

*June 21, 2024*
*1:20PM-5:50PM EDT*

**Problem 4.** Find the smallest four-digit positive integer $n = \overline{abcd}_{10}$ with $a \neq 0$, $c \neq 0$ such that $\varphi(n) = \overline{ab}_{10} \cdot \overline{cd}_{10}$, where $\varphi(n)$ is the Euler totient function.

**Problem 5.** Can every convex decagon be dissected into pentagons, each of which has every angle greater than 90 degrees?

**Problem 6.** Let Gamma be a circle. Point A is a point on Gamma and point B is a point strictly inside Gamma. The perpendicular bisector of AB intersects Gamma at E and F. Lines BE and BF intersect Gamma again at X and Y. Prove that angle BAX and BAY are equal.

*Time limit: 10 minutes.*
*Each problem is worth 0 points.*