2026

F1

- Program, webpage, literature, TEN, KTR, prev. years, overview

Sets

- $\{x_1, x_2, \dots\}$, $\{x : P\}$, $\in$, $\subseteq$. (No repetition!)
- $\mathbb{Z}_+$, $\mathbb{N}$, $\mathbb{Z}$, $\mathbb{Q}$, $\mathbb{R}$, $\mathbb{C}$, $\emptyset$
- $\cup$, $\cap$, $\setminus$, $\times$, $1\text{-}1$, $\mathcal{P}$

Ex. $\{x \in \mathbb{Z} : |x + \frac{1}{2}| < 2\} \times \mathcal{P}(\mathbb{N} \setminus \mathbb{Z}_+) = \dots$

- "$\Rightarrow$": meaning, how to prove

Induction principle

Ex. Prove $\sum_{j=0}^{n} j\, 2^j = 2 + (n-1) \cdot 2^{n+1}$ $\forall n \in \mathbb{N}$

Ex. Prove $5^n > 8n^2$ $\forall n \in \mathbb{N}$, $n \geq 3$.

if time [Ex. Prove $2^n \times 2^n$-chessboard minus one square can be tiled by ⊞-shapes.

Strong ind.

Ex. Show every $n \in \mathbb{Z}$, $n \geq 12$ is sum of 4's, 6's, 9's.

if time [Also using ordinary ind.: $4+4 \to 9$, $6+6 \to 4+9$, $9 \to 4+6$.