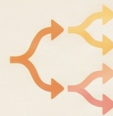


Original Problem



Stage 1: Forward Sampling

Generate m reasoning chains (CoT, Temp=0.7)
Extract candidate answers



m Candidate Answers

Stage 2a: Backsolve Check (B-score)

Plug answer into original problem
Verify problem constraints



B -score (0-1)

Verdict (PASS/FAIL)

B -score

Stage 2b: Falsification Ensemble (F-score)

Run k adversarial 'refuter' prompts

- Unit Conversion/Quantity Misreads
- Algebraic/Arithmetic Errors
- Constraint Violations

F-score = $1 - \text{mean}(\text{error_probability})$

F -score (0-1)

Stage 3: Anti-Verbosity Regularization (L-score)

L -score = $\exp(-\lambda \times \text{token_count} / \text{tokens}_0)$
Penalize verbose reasoning chains



L -score (0-1)

Stage 4: Weighted Aggregation

Combined weight: $w = B^\alpha \times F^\beta \times L$
Group answers by **value**, sum weights
Select answer with maximum total weight



Final Answer