Problem C: Sum of LCMs

Time limit: 2s; Memory limit: 512 MB

Given a sequence **A** consisting of **N** positive integers.

Consider all non-empty subsets of the sequence **A**, and calculate the **least common multiple (LCM)** of each subset. Find the sum of all these LCMs.

Since the result can be very large, return the remainder of the sum modulo 10^9+7.

Input

- The first line contains a positive integer **T**, the number of test cases ($1 \leq \mathbf{T} \leq 40$).
- For each test case:
  - The first line contains a single positive integer **N**. ($1 \leq \mathbf{N} \leq 100$).
  - The next N lines each contain a positive integer **A**[i]. ($1 \leq \mathbf{A}[i] \leq 500$).

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Output

- **T** lines, each containing a single positive integer representing the answer for each test case.

Sample

Input	Output
4 5 1 1 1 1 1 3 1 2 3 6 4 4 4 2 2 2 10 9 5 12 58 1 85 24 90 100 99	31 23 238 651657343