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D - Make Geometric Sequence

Editorial (/contests/abc413/tasks/abc413_d/editorial)

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score: 425 points

Problem Statement

You are given an integer sequence $A=(A_1,A_2,\dots,A_N)$ of length N. It is guaranteed that for any $i\ (1\leq i\leq N),A_i$ is not 0.

Determine whether there exists a permutation $B=(B_1,B_2,\ldots,B_N)$ of A such that B forms a geometric sequence.

A sequence $S=(S_1,S_2,\ldots,S_N)$ is a geometric sequence if there exists a real number r such that $S_{i+1}=rS_i$ for all integers $1\leq i< N$.

Solve T test cases per input file.

Constraints

• $1 \le T \le 10^5$

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• $2 \leq N \leq 2 imes 10^5$

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- $-10^9 \le A_i \le 10^9 \ (1 \le i \le N)$
- $A_i \neq 0 \ (1 \leq i \leq N)$
- The sum of N over all test cases in a single input file is at most $2 imes 10^5$.
- All input values are integers.

Input

The input is given from standard input in the following format:

```
T
testcase_1
testcase_2
\vdots
testcase_T
```

where $\mathrm{testcase}_i$ is the i-th test case $(1 \leq i \leq T)$, and each test case is given in the following format:

Output

Output T lines. The i-th line $(1 \le i \le T)$ should contain Yes if A can be rearranged to form a geometric sequence in the i-th test case, and No otherwise.

Sample Input 1

Сору

Сору

```
Copy

5

1 8 2 4 16

5

-16 24 54 81 -36

7

90000 8100 -27000 729 -300000 -2430 1000000
```

Sample Output 1

2025-07-05 (Sat) 23:21:43 -04:00 Yes
No
Yes

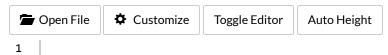
In the first test case, the rearrangement (16,8,4,2,1) of A forms a geometric sequence with common ratio $r=\frac{1}{2}$. Thus, print Yes on the first line.

In the second test case, no rearrangement of A satisfies the condition. Thus, print No on the second line.

Language

Python (CPython 3.11.4)

Source Code



^{*} Your source code will be saved as Main. extension.



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^{*} at most 512 KiB

Submit

(/#telegram)

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