

Problem I

Forming Compounds

Cheryl is an ambitious chemist who likes to conduct an experiment. In her lab, she has N different types of atom numbered from 1 to N . We can assume that for all i , Cheryl has infinitely many atoms of type i . All atoms of the i^{th} type have a weight of a positive integer W_i .

Cheryl would like to combine atoms of two different types to create a compound. A compound of type (x, y) ($1 \leq x < y \leq N$) can be created by combining at least one atom of type x and at least one atom of type y . The weight of a compound is the sum of the weight of all the atoms used to create it. To avoid destroying her lab, Cheryl would not create a compound with a weight of more than 10^{12} . Note that there are $\frac{N(N-1)}{2}$ distinct compound types.

The variety of a compound type is the number of distinct weight of that compound that can be created by Cheryl. In other words, the variety of a compound type (x, y) is the number of distinct weight w not more than 10^{12} such that there exists positive integers α and β satisfying $w = W_x \cdot \alpha + W_y \cdot \beta$.

For example, let $N = 5$ and $W_{1..5} = \{2, 3, 4, 3, 3\}$.

- Atoms of the 1^{st} type and atoms of the 2^{nd} type can be combined to create a compound with a weight of 5 or any weight between 7 and 10^{12} , inclusive. Therefore, the variety of compound type $(1, 2)$ is 999 999 999 995.
- Atoms of the 1^{st} type and atoms of the 3^{rd} type can be combined to create a compound with any even weight between 6 and 10^{12} , inclusive. Therefore, the variety of compound type $(1, 3)$ is 499 999 999 998.
- The variety of compound type $(1, 4)$ and $(1, 5)$ is 999 999 999 995.
- Atoms of the 2^{nd} type and atoms of the 3^{rd} type can be combined to create a compound with a weight of 7, 10, 11, or any weight between 13 and 10^{12} , inclusive. Therefore, the variety of compound type $(2, 3)$ is 999 999 999 991.
- Atoms of the 2^{nd} type and atoms of the 4^{th} type can be combined to create a compound with any weight between 6 and 10^{12} that is divisible by 3, inclusive. Therefore, the variety of compound type $(2, 4)$ is 333 333 333 332.
- The variety of compound type $(2, 5)$ and $(4, 5)$ is 333 333 333 332.
- The variety of compound type $(3, 4)$ and $(3, 5)$ is 999 999 999 991.

For each compound type, Cheryl can choose to create exactly one compound of that type or to not create any compound of that type. We say that a compound type (x, y) is created if Cheryl chooses to create a compound of type (x, y) .

If a compound type (x, y) is created, then any other compound type of the same variety as (x, y) must also be created. There are Q questions that Cheryl would like to answer. For the j^{th} question, Cheryl is wondering whether she can create exactly K_j compounds.

Input

Input begins with a line containing two integers: N Q ($2 \leq N \leq 500$; $1 \leq Q \leq 100\,000$) representing the number of atom types and the number of questions, respectively. The next line contains N integers: W_i ($1 \leq W_i \leq 100\,000$) representing the weight of the atoms. The next Q lines each contains an integer: K_j ($1 \leq K_j \leq \frac{N(N-1)}{2}$) representing the number of compounds to be created.

Output

For each query in the same order as input, output in a line a string “YES” (without quotes) or “NO” (without quotes) whether it is possible to create exactly K_j compounds.

Sample Input #1

```
5 4
2 3 4 3 3
1
2
3
10
```

Sample Output #1

```
YES
NO
YES
YES
```

Explanation for the sample input/output #1

This is the example from the problem description.

There are three compound types with a variety of 999 999 999 995 ((1, 2), (1, 4), and (1, 5)), three compound types with a variety of 999 999 999 991 ((2, 3), (3, 4), and (3, 5)), three compound types with a variety of 333 333 333 332 ((2, 4), (2, 5), and (4, 5)), and one compound type with a variety of 499 999 999 998 ((1, 3)). Therefore,

- It is possible to create 1 compound. The only solution is to create compound type (1, 3).
- It is not possible to create 2 compounds. If compound type (1, 2) is created, then compound types (1, 4) and (1, 5) must also be created. This is similar for other compound types (except compound type (1, 3)).
- It is possible to create 3 compounds. An example solution is to create compound types (1, 2), (1, 4), and (1, 5).
- It is possible to create 10 compounds. The only solution is to create compound types (1, 2), (1, 3), (1, 4), (1, 5), (2, 3), (2, 4), (2, 5), (3, 4), (3, 5), and (4, 5).