Degree of an algebraic number

A number is *algebraic* if it is a root of some nonzero polynomial with integer coefficients. A number is *transcendental* if it is not algebraic.

For example, 11, i, $\sqrt[3]{2}$ and ϕ (golden ratio) are algebraic, because they are roots of $x - 11$, $x^2 + 1$, $x^3 - 2$ and $x^2 - x - 1$, respectively. Also, it can be shown that the sum and product of two algebraic numbers is also algebraic, so for example $24 + i$, $\sqrt{2} + \sqrt{3}$ and $\sqrt[3]{11}\phi$ are also algebraic. However, it has been shown by Lindemann that π is transcendental.

The *degree* of an algebraic number is the minimal degree of a polynomial with integer coefficients in which it is a root. For example, the degrees of 5, i, $\sqrt[3]{2}$ and ϕ are 1, 2, 3 and 2, respectively.

Given N positive integers A_1, A_2, ..., A_N, calculate the degree of the following algebraic number:

$$\sqrt{A_1} + \sqrt{A_2} + \sqrt{A_3} + \cdots + \sqrt{A_N}$$

Input Format
The first line of input contains T, the number of test cases. The descriptions of the test cases follow.

Each test case has two lines of input. The first line contains a single integer, N. The second line contains N integers A_1, ..., A_N separated by single spaces.

Output Format
For each test case, output one line containing exactly one integer, which is the answer for that test case.

Constraints
$1 \leq T \leq 10^5$
$1 \leq N \leq 50$
$1 \leq A_i \leq 10^7$
The sum of the N's in a single test file is at most 10^5

Sample Input

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

Sample Output

```
1
2
8
```

Explanation
Case 1: A minimal polynomial of $\sqrt{4}$ is $2x - 4$.

Case 2: A minimal polynomial of $\sqrt{2} + \sqrt{4} + \sqrt{4}$ is $x^2 - 8x + 14$.

Case 3: A minimal polynomial of $\sqrt{1}+\sqrt{2}+\sqrt{3}+\sqrt{5}$ is:

$$x^8 - 8x^7 - 12x^6 + 184x^5 - 178x^4 - 664x^3 + 580x^2 + 744x - 71$$