For any positive integer N, $N = a_1^2 + a_2^2 + \ldots + a_n^2$ that is, any positive integer can be represented as sum of squares of other numbers.

Your task is to print the smallest 'n' such that $N = a_1^2 + a_2^2 + \ldots + a_n^2$.

Input

The first line of the input will contain an integer 't' which indicates the number of test cases to follow.

Each test case will contain a single integer 'N' ($1 \leq N \leq 10000$) on a line by itself.

Output

Print an integer which represents the smallest 'n' such that $N = a_1^2 + a_2^2 + \ldots + a_n^2$.

Explanation for sample test cases:

5 $\rightarrow$ number of test cases
1 $= 1^2$ (1 term)
2 $= 1^2 + 1^2$ (2 terms)
3 $= 1^2 + 1^2 + 1^2$ (3 terms)
4 $= 2^2$ (1 term)
50 $= 5^2 + 5^2$ (2 terms)

Sample Input

```
5
1
2
3
4
50
```

Sample Output

```
1
2
3
1
2
```