Squares

For any positive integer N , $N = a1\ ^2 + a2\ ^2 + ... + an\ ^2$ 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 $N = a1\ ^2 + a2\ ^2 + ... + an\ ^2$.

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

$N = a1\ ^2 + a2\ ^2 + ... + an\ ^2$.

Explanation for sample test cases:

`5` - > 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)

`1` = 2 ^2 (1 term)

`2` = 5 ^2 + 5 ^2 (2 terms)

Sample Input

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

Sample Output

```
1
2
3
1
2
```
