Changus Big Battle

This version has been moved to tutorial section.

You can access the classical version here: [Changus Final Battle](http://www.spoj.com/problems/VECTAR4/) :
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Changu is going to fight a battle. He is powerful but he has a few limitations. If he kills x enemies on a particular day, then he can only kill x-1 or x or x+1 enemies on the next day. And also, he can kill no more than 1 enemy on the last day of battle. Given N, the number of enemies he has to kill to end the battle, you have to calculate the minimum number of days required for Changu to finish the battle, keeping in mind his limitations. **He starts on day 1 by x=1, i.e. killing one enemy.**

Input

The first line contains an integer T denoting the number of test cases.

Each of the next T lines contain an integer N.

Output

T lines : Minimum number of days required for each test case.

Constraints

1 <= N <= 10^9

1 <= T <= 5*10^5

Example

Input:
3
4
1
9

Output:
3
1
5

Explanation

Case 1 : 1 + 2 + 1

Case 2 : 1

Case 3 : 1 + 2 + 3 + 2 + 1