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Coins And Triangle

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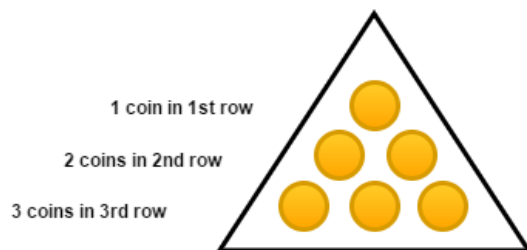
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Chef belongs to a very rich family which owns many gold mines. Today, he brought **N** gold coins and decided to form a triangle using these coins. Isn't it strange?

Chef has a unusual way of forming a triangle using gold coins, which is described as follows:

- He puts **1** coin in the **1st** row.
- then puts **2** coins in the **2nd** row.
- then puts **3** coins in the **3rd** row.
- and so on as shown in the given figure.



A Traingle with height = 3 requires 6 coins

Chef is interested in forming a triangle with maximum possible height using at most **N** coins. Can you tell him the maximum possible height of the triangle?

Input

The first line of input contains a single integer **T** denoting the number of test cases.

The first and the only line of each test case contains an integer **N** denoting the number of gold coins Chef has.

Output

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Constraints

- $1 \leq T \leq 100$
 - $1 \leq N \leq 10^9$
-

Subtasks

- Subtask 1 (48 points) : $1 \leq N \leq 10^5$
 - Subtask 2 (52 points) : $1 \leq N \leq 10^9$
-

Example

Input

3
3
5
7

Output

2
2
3

Explanation

- **Test 1:** Chef can't form a triangle with height > 2 as it requires atleast 6 gold coins.
- **Test 2:** Chef can't form a triangle with height > 2 as it requires atleast 6 gold coins.
- **Test 3:** Chef can't form a triangle with height > 3 as it requires atleast 10 gold coins.

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Editorial: <http://discuss.codechef.com/problems/TRICOIN>

Tags: [binary-search](#), [cakewalk](#), [implementation](#), [ltime35](#), [ma5termind](#), [mathematics](#), [sqrt](#)

Date Added: 19-04-2016

Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: C, CPP14, JAVA, PYTH, PYTH 3.5, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, SCALA, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, PERL6, TEXT, SCM chicken, CLOJ, FS

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