

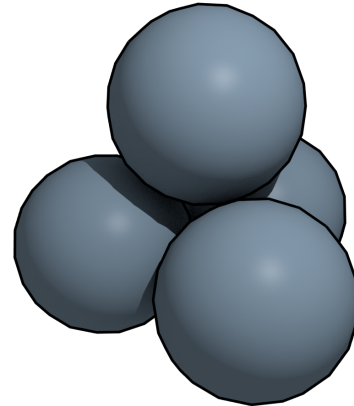
Problem A

Cannonball Pyramids

Time Limit: 2 seconds

Fort Calgary seems to have an excess of cannonballs left over from its war with the whiskey traders of the 19th century, and has tasked Peter with stacking them up for storage. As a computer scientist, Peter thought he'd develop an Automatic Cannonball Pyramid Creator (ACPC) to make the task easier.

Cannonballs are all perfectly spherical and exactly the same size. Peter will always stack the cannonballs in a triangular pyramid for storage (see diagram). Floor space is at a premium, so Peter would like to use the smallest triangular base (or part thereof) possible for the stack. Once the base is established, it'd be nice to stack the cannonballs in as few levels as possible so that we wouldn't have to reach so high to retrieve them.



Can you write a program to determine the smallest height of the pyramid, given the number of cannonballs to stack, to help Peter develop the ACPC?

Input

The input file starts with an integer T ($1 \leq T \leq 1000$), the number of test cases. Each test case consists of a single integer N ($1 \leq N \leq 10^{15}$), the number of cannonballs.

Output

For each test case, output the minimum number of levels that you need in order to stack N cannonballs using the smallest base possible (or a portion of it, see examples).

Sample Input	Sample Output
4	1
2	2
4	1
5	3
10	