

Pigeonhole Tower

Pigeon SSNA want to build a tower with some wood walls. Let's describe the tower they want to make:

1. A Tower can consist of different number of level.
2. If a tower contain L levels then 1st level must contain L holes, 2nd level $L-1$, 3rd level $L-2$ L level contain 1 hole.
3. Each room contain 3 wood walls.

See the picture below:



3 Level Tower 4 Level tower

Now pigeon SSNA has n wood walls. What is maximum number of level he can made.

Input

Input starts with an integer T (≤ 100000), denoting the number of test cases.

Each case starts with a line containing an integer n ($1 \leq n \leq 10^{12}$)

Output

For each case of input you have to print the case number and expected answer.

Example

Input:

2
15
24

Output:

Case 1: 3
Case 2: 4