The number of diagonals of an n-gon is not less than N. What is the minimum possible value of n?

A Hexagon or 6-gon has nine diagonals
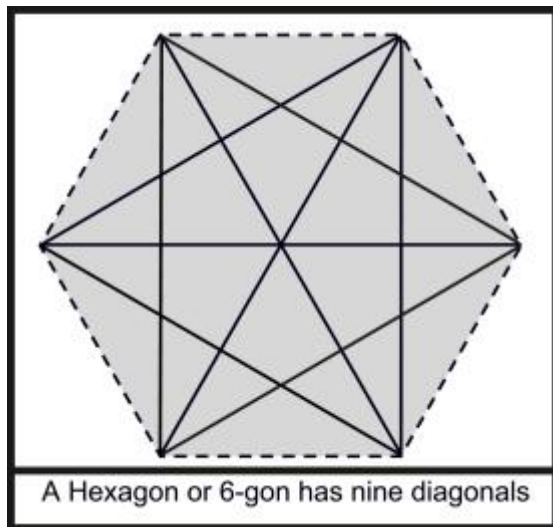
Input

The input file contains less than 1001 lines of inputs. Each line contains a positive integer N ($N \leq 10^{15}$) that indicates the minimum possible number of diagonals. Input is terminated by a line containing a zero. This line should not be processed.

Output

For each line of input produce one line of output, which contains the output serial number, and also the minimum possible value for n (Number of sides).

Sample Input

```
10
100
1000
0
```

Sample Output

```
Case 1: 7
Case 2: 16
Case 3: 47
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