

# TLE '16 Contest 7 P4 - Abstract Problem

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**Time limit:** 1.0s    **Memory limit:** 256M  
Python 2: 6.0s  
Python 3: 6.0s

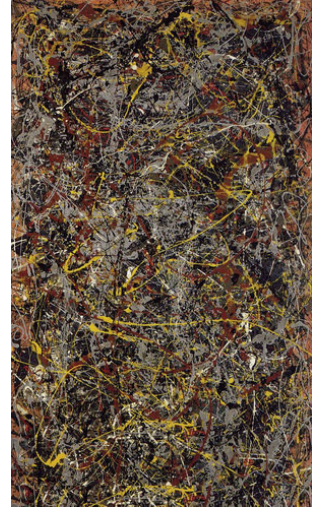
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You see an abstract problem on Codeforces.

Given an integer  $x$  you want to change 0 into that number using a minimal number of the following operations:

- Add 1
- Subtract 1
- Multiply by 2

You think it is too easy, so you increase  $x$  to  $X$  ( $1 \leq X < 2^{63}$ ), and decide that you should answer  $T$  ( $T \leq 300\,000$ ) of these queries per test case.



*Abstract art, like abstract problems, is very enjoyable.*

## Input Specification

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The first line of input will contain  $T$ .

The next  $T$  lines of input will each contain  $X$ .

## Output Specification

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For each  $X$ , output on separate lines the minimal number of operations necessary to change 0 into  $X$ .

## Sample Input

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2
32
15
```

## Sample Output

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6

6