Down to Zero II

You are given Q queries. Each query consists of a single number N. You can perform 2 operations on N in each move. If $N = a \times b (a \neq 1, b \neq 1)$, we can change $N = max(a, b)$ or decrease the value of N by 1.

Determine the minimum number of moves required to reduce the value of N to 0.

Input Format

The first line contains the integer Q.
The next Q lines each contain an integer, N.

Constraints

$1 \leq Q \leq 10^3$
$0 \leq N \leq 10^6$

Output Format

Output Q lines. Each line containing the minimum number of moves required to reduce the value of N to 0.

Sample Input

```
1
3
```

Sample Output

```
3
```

Explanation

We only have one option that gives the minimum number of moves.
Follow 3 -> 2 -> 1 -> 0. Hence, 3 moves.