

Count Palindromes



A string is made of only lowercase latin letters (a,b,c,d,.....,z). Can you find the length of the lexicographically smallest string such that it has exactly K sub-strings, each of which are palindromes?

Input Format

The first line of input contains single integer T - the number of testcases.
T lines follow, each containing the integer K .

Constraints

- $1 \leq T \leq 100$
- $1 \leq K \leq 10^{12}$

Output Format

Output exactly T lines. Each line should contain single integer - the length of the lexicographically smallest string.

Sample Input

```
2
10
17
```

Sample Output

```
4
7
```

Explanation

for $K = 10$, one of the smallest possible strings that satisfies the property is **aaaa**. All **10** palindromes are

- a,a,a,a
- aa, aa, aa
- aaa, aaa
- aaaa

Note

Two sub-strings with different indices are both counted.