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.

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

Constraints:
$1 <= T <= 100$
$1 <= K <= 10^{12}$

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.