

Daenerys wants to Conquer

With full zeal, Daenerys Targaryen is looking to conquer the seven kingdoms. In need of wise commanders, she wants them to solve the below problem:

Given the following function F and an integer N find the smallest integer x satisfying $F(x) = N$.

$$F(x) = \sum_{\substack{d|x \\ \gcd(d, x/d)=1}} d$$

If no such x exists, print "-1". (without quotes)

Input Format:

The first line contains one integer T , the number of times she gives you the problem.

T lines follow, each containing a single integer N .

Output Format:

Print answer for each problem in a separate line.

Constraints:

$$1 \leq T \leq 10$$

$$1 \leq N \leq 10^{10}$$

Sample Input:

```
4
5
4
9
7
```

Sample Output:

```
4
3
8
-1
```