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G. Short Task

time limit per test: 2 seconds memory limit per test: 512 megabytes input: standard input output: standard output

Let us denote by d(n) the sum of all divisors of the number n, i.e. $d(n) = \sum\limits_{k|n} k$.

For example, d(1) = 1, d(4) = 1 + 2 + 4 = 7, d(6) = 1 + 2 + 3 + 6 = 12.

For a given number c, find the minimum n such that d(n) = c.

Input

The first line contains one integer t ($1 \le t \le 10^4$). Then t test cases follow.

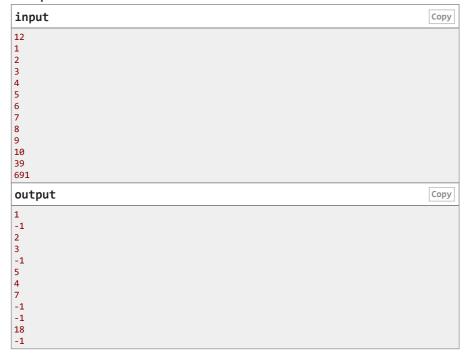
Each test case is characterized by one integer c ($1 \le c \le 10^7$).

Output

For each test case, output:

- "-1" if there is no such n that d(n) = c;
- n, otherwise.

Example



Codeforces Round #713 (Div. 3). Contest is running 01:57:23 Contestant



