E. Ehab's REAL Number Theory Problem
https://codeforces.com/problemset/problem/1325/E

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an array a of length n that has a special condition: every element in this array has at most 7 divisors. Find the length of the shortest non-empty subsequence of this array product of whose elements is a perfect square.

A sequence a is a subsequence of an array b if a can be obtained from b by deletion of several (possibly, zero or all) elements.

Input
The first line contains an integer n ($1 \leq n \leq 10^5$) – the length of a.

The second line contains n integers a_1, a_2, ..., a_n ($1 \leq a_i \leq 10^6$) – the elements of the array a.

Output
Output the length of the shortest non-empty subsequence of a product of whose elements is a perfect square. If there are several shortest subsequences, you can find any of them. If there's no such subsequence, print "-1".

Examples

Input	Output
3 1 4 6	1
4 2 3 6 6	2
3 6 15 10	3
4 2 3 5 7	-1

Note
In the first sample, you can choose a subsequence [1].

In the second sample, you can choose a subsequence [6,6].

In the third sample, you can choose a subsequence [6,15,10].

In the fourth sample, there is no such subsequence.