D. Cows and Cool Sequences

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Bessie and the cows have recently been playing with "cool" sequences and are trying to construct some. Unfortunately they are bad at arithmetic, so they need your help!

A pair (x, y) of positive integers is "cool" if x can be expressed as the sum of y consecutive integers (not necessarily positive). A sequence $(a_1, a_2, ..., a_n)$ is "cool" if the pairs $(a_1, a_2), (a_2, a_3), ..., (a_{n-1}, a_n)$ are all cool.

The cows have a sequence of n positive integers, $a_1, a_2, ..., a_n$. In one move, they may replace some a_i with any other positive integer (there are no other limits on the new value of a_i). Determine the smallest number of moves needed to make the resulting sequence cool.

Input

The first line contains a single integer, n ($2 \le n \le 5000$). The next line contains n space-separated integers, $a_1, a_2, ..., a_n$ ($1 \le a_i \le 10^{15}$).

Please do not use the `%lld` specifier to read or write 64-bit integers in C++. It is preferred to use the `cin`, `cout` streams or the `%I64d` specifier.

Output

A single integer, the minimum number of a_i that must be changed to make the sequence cool.

Examples

input
3 6 4 1

output
0

input
4 20 6 3 4

output
2

Note

In the first sample, the sequence is already cool, so we don't need to change any elements. In the second sample, we can change a_2 to 5 and a_3 to 10 to make (20, 5, 10, 4) which is cool. This changes 2 elements.