Problem B. Building Plan

You are building a city in a 1D line. Currently you just build n buildings on integer coordinates $x_1, x_2, \cdots, x_n$. The coordinates are distinct, so there are at most one building in each point.

However, you want the distance between adjacent buildings to be all the same. To do that, the only thing you can do is just additionally build more buildings on the line. Note that the additionally built buildings are also 'buildings', so they are also considered when finding the distance between adjacent buildings. Building takes money, so the number of buildings you will build should be the minimum possible. Given n and $x_1, x_2, \cdots, x_n$, write a program that calculates the minimum number of buildings needed to be built in order to make the distance between adjacent buildings equal.

Input

Your input consists of an arbitrary number of records, but no more than 50.

Each record consists of two lines. The first line contains an integer n ($2 \leq n \leq$ 10,000). The next line contains n integers $x_1, x_2, \cdots, x_n$ ($-10^{18} \leq x_i \leq 10^{18}$), each separated by a space. It is guaranteed that these integers are all distinct.

The end of input is indicated by a line containing only the value -1.

Output

For each input record, print a line that contains the minimum number of buildings needed to be built in order to make the distance between adjacent buildings equal.

Example

Standard input	Standard output
4 1 3 5 9 3 -1 0 1 -1	1 0

Explanation of the example

For the first example: if we build one building on coordinate 7, the distance between adjacent buildings becomes 2.

Time Limit

1 second.