Police Investigation 6 (police6)

Fearsome William is still trying to hide from the police, who have stepped up the game. In a very long (L meters) street, the police officers have set up N checkpoints, to first see and then stop the criminal.

With the help of binoculars, the officers at each checkpoint are able to see up to M meters away in both directions. Formally, this means that a checkpoint located at $D[i]$ meters from the beginning of the street can see people from $D[i]-M$ meters (included) to $D[i]+M$ meters (included), measured from the beginning of the street.

Figure 1: Officers standing ready at a checkpoint.

William is no longer by car and has no other choice to walk a little bit and spend the night hiding somewhere along the street with all the checkpoints, at any point from 0 to L (both included). He wants to minimize the number of checkpoints from which he can be seen: in one of the possibly many optimal positions, how many checkpoints will he be visible from?

> ☞ Among the attachments of this task you may find a template file `police6.*` with a sample incomplete implementation.

Input

The first line contains three integers N, M, and L. The second line contains N integers D_i.

Output

You need to write a single line with an integer: the minimum number of checkpoints from which William will be visible.

Constraints

- $1 \leq N \leq 100\,000$.
- $1 \leq M \leq 10^{18}$.
- $1 \leq L \leq 10^{18}$.
- Checkpoints are all at different positions and are listed in order: $D[i] < D[j]$ for all $1 \leq i < j \leq N-1$
- $0 \leq D_i \leq L$ for each $i = 0 \ldots N-1$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (11 points) $N = 1$.

– **Subtask 3** (16 points) Checkpoints are evenly spaced: the distance between two consecutive ones, as well as the distance between 0 and the first one, and the last one and L, is constant.

– **Subtask 4** (22 points) $L \leq 1000$.

– **Subtask 5** (13 points) $N \leq 1000$.

– **Subtask 6** (38 points) No additional limitations.

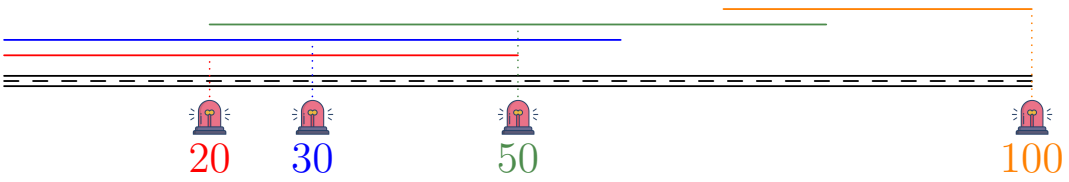
Examples

input	output
4 30 100 20 30 50 100	1
2 100 100 0 100	2

Explanation

In the **first sample case**:

- positions from 0 to 19 (both included) are visible from 2 checkpoints;
- positions from 20 to 50 (both included) are visible from 3 checkpoints;
- positions from 51 to 60 (both included) are visible from 2 checkpoints;
- positions from 61 to 69 (both included) are visible from 1 checkpoint;
- positions from 70 to 80 (both included) are visible from 2 checkpoints;
- positions from 81 to 100 (both included) are visible from 1 checkpoint.



An optimal strategy for William is therefore to hide somewhere between 61 and 69 or between 81 and 100 and to be visible from 1 checkpoint.

In the **second sample case**, William has no choice but to be visible from both checkpoints.