Problem H
Platform Placing
Time Limit: 1 Second(s)

The city of Atlantis is making an above-water section. They are doing so by building floating platforms that are anchored at their centers to foundation points that lie in a straight line at the bottom of the ocean. Each platform is a fixed-width rectangle aligned to the foundation line; specifically, a platform of length ℓ anchored to a foundation point at position x along the line occupies the interval $[x - \frac{\ell}{2}, x + \frac{\ell}{2}]$ along the line on the ocean surface. The platforms can be of different lengths, but have both a minimum and a maximum length. Gaps are allowed between consecutive platforms, and platforms are allowed to exactly touch, but they may not overlap. Each foundation point must be attached to exactly one platform.

Help the Atlanteans maximize their above-water section: given the locations of the foundation points and the minimum and maximum allowed platform lengths, determine the maximum possible sum of platform lengths.

Input

The first line of input contains three space separated integers n ($1 \leq n \leq 10^5$), s and k ($1 \leq s \leq k \leq 10^5$), where n is the number of foundation points, s is the smallest platform length possible, and k is the largest platform length possible.

Each of the next n lines contains a single integer x ($1 \leq x \leq 10^9$), representing the location of a foundation point. No two foundation points will be the same.

Output

Output a single integer, which is the maximum possible sum of platform lengths, or -1 if it isn't possible to place the platforms.

Sample Input 1	Sample Output 1
4 1 4 1 6 8 10	11

Sample Input 2

```
5 1 6
6
7
8
3
5
```

Sample Output 2

```
7
```

Sample Input 3

```
2 5 10
1
2
```

Sample Output 3

```
-1
```

Problem I
Problem Pool
Time Limit: 1 Second(s)

ICPC is having multiple regionals on the same day, and these regionals are all pulling problems from the same problem pool. To make sure regionals are distinct there is a rule that each regional problem set must have at least some number of problems different from each other regional problem set, pairwise. For example, if there are three regionals (let's call them **A**, **B** and **C**) and the number of required distinct problems is four, then **A**'s problem set must contain at least four problems that are not in **B**'s problem set. **A**'s problem set must also contain at least four problems that are not in **C**'s problem set, but they might not be the same four problems.

All regions want to put as many problems as they can in their problem set. What's the largest number of problems so that every region can have that many problems in their set, given the number of problems in the pool to pick from, the number of regionals, and the number of problems each regional problem set must have distinct from each other regional problem set? Every problem set must have at least one problem.

Input

The single line of input contains three integers n, r and d ($1 \leq n, r, d \leq 10^9$), where n is the number of problems in the pool, r is the number of regionals, and d is the number of problems for each regional problem set that must be distinct from each other regional problem set, pairwise.

Output

Output a single integer, which is the maximum number of problems that every region can have in their problem set when drawing problems from the pool, subject to the distinct problems rule. Output -1 if it isn't possible to form r problem sets subject to the rule, all of which have at least one problem.

Sample Input 1	Sample Output 1
5 2 2	3

Sample Input 2	Sample Output 2
10 4 3	1

Sample Input 3	Sample Output 3
2 2 2	-1