בס"ד

# The problem:

**Goal**

A cafeteria table consists of a row of N seats, numbered from 1 to N from left to right. Social distancing guidelines require that every diner be seated such that K seats to their left and K seats to their right (or all the remaining seats to that side if there are fewer than K) remain empty.  
There are currently M diners seated at the table, the ith of whom is in seat S[i].  
  
Determine the maximum number of additional diners who can potentially sit at the table without social distancing guidelines being violated for any new or existing diners, assuming that the existing diners cannot move and that the additional diners will cooperate to maximize how many of them can sit down.  
  
  
As an exemple, the cafeteria table has N = 10 seats, with two diners currently at seats 2 and 6 respectively. The table initially looks as follows, with brackets covering the K = 1 seat to the left and right of each existing diner that may not be taken.  
[1 X 3] 4 [5 X 7] 8 9 10  
  
Three additional diners may sit at seats 4, 8, and 10 without violating the social distancing guidelines.

**Input**

**Line 1:** An integer N for the number of seats in table  
**Line 2:** An integer K for the number of empty seats required by the social distancing  
**Line 3:** An integer M for the number of diners seated at the table  
**Next**M**lines:** An integer for the position of the seat occupied by a diner

**Output**

**Line 1 :** An integer the maximum number of additional diners who can potentially sit at the table without social distancing guidelines being violated.

**Constraints**

1≤ N ≤10000  
1≤ K ≤ N​  
0≤ M ≤ 500  
M ≤ N  
0 ≤ S ≤N  
  
No two diners are sitting in the same seat

**Example**

**Input**

10

1

2

2

6

Ouput:

3

# Tests:

### **Sample case**

10

1

2

2

6

3

**02**

### **Small table**

15

2

3

11

6

14

1

**03**

### **Medium table**

50

0

3

1

2

50

47

**04**

### **Great table**

100

1

0

50

**05**

### **Big family**

10000

7

10

1

100

250

314

487

569

500

658

712

942

1236