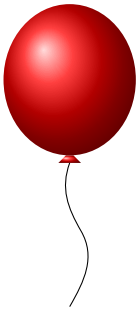
XAPC > badas
Algorithmic Programming Contest

C Educational Round



Time limit: 1.0s
Memory limit: 256MB

You wrote a contest where you competed against n other participants, and you were given p problems to solve.

You solved exactly x problems. For each problem i, you know that it was solved by exactly k_i of your competitors.

You do not know which participants solved which problems. Find the minimum possible number of participants who solved strictly more problems than you.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \le t \le 1000$). The description of the test cases follows.

The first line of each test case contains three integers n, p, and x ($1 \le n, p \le 10^6$, $0 \le x \le p$) — the number of your competitors, the number of problems, and the number of problems you solved.

The second line of each test case contains p integers $k_1, k_2, \ldots, k_p$ ($0 \le k_i \le n$), where k_i is the number of other competitors who solved problem i.

It is guaranteed that the sum of n and the sum of p over all test cases do not exceed 10^6.

Output

For each test case, output a single integer — the minimum possible number of participants who could have solved strictly more problems than you.

Samples

Sample input 1	Sample output 1
4 2 4 1 2 2 2 2 5 2 1 0 1 4 5 3 4 4 3 3 0 6 6 3 4 4 4 3 3 4	2 0 2 2