RMI Results (rmi)

Rising Minds in Informatics (RMI) is a two-day competition aimed at discovering and nurturing young talents in the field of computer science and informatics.

As a participant of RMI, you would like to estimate your final rank before the award ceremony. The overall scoreboard has not been released yet, but you have the scores of all contestants for each day separately, without knowing which score belongs to whom. You also know your own scores for both days.

Figure 1: The contest hall before RMI starts.

Your task is to determine:

- **Best possible place**: The highest rank you could achieve based on the sum of scores, assuming the most favorable pairing of scores for you.
- **Worst possible place**: The lowest rank you could achieve based on the sum of scores, assuming the least favorable pairing of scores for you.

What are your best and worst possible ranks in the combined total score standings? Ties (draws) are allowed, meaning multiple contestants with the same total score will share the same rank. In other words, if K participants have a strictly greater score than you: you will be considered the $(K+1)$-th.

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

Input

The first line contains 3 integers A, B, N, where A is your score for the first day, B is your score for the second day and there are N participants excluding you.

The second line contains N integers F_i, the scores of the *other* participants for the first contest day. (Please note that your score is not included in this list.)

The third line contains N integers S_i, the scores of the *other* participants for the second contest day. (Please note that your score is not included in this list.)

Output

You need to write a single line with two integers: your best possible rank and your worst possible rank.

Constraints

- $1 \leq N \leq 100\,000$.
- $0 \leq A, B, F_i, S_i \leq 1\,000\,000\,000$ 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.

In each subtask, you can get **partial** scores. You will get 50% of the points for a subtask if you successfully determine your best possible rank in every test case, but the value of the worst possible rank is incorrect at least once. To obtain the partial score, make sure that the output of your program conforms to the output specification above, otherwise, the grader might reject your solution due to formatting error.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (30 points) $N \leq 9$. $A, B, F_i, S_i \leq 100$ for each $i = 0 \ldots N-1$.

– **Subtask 3** (20 points) $N \leq 100$. $A, B, F_i, S_i \leq 1000$ for each $i = 0 \ldots N-1$.

– **Subtask 4** (50 points) No additional limitations.

Examples

input	output
100 200 2 200 200 100 100	1 1
200 100 3 100 150 200 200 100 150	1 3
200 100 9 100 150 200 310 0 120 160 140 180 100 150 310 0 80 100 100 140 120	2 6

Explanation

In the **first sample case** everyone has a combined score of 300 points. There is a draw in the first place.

In the **second sample case**, since $150+150 = 100+200 = 200+100 = 300$, you can be ranked first. But if you are not that lucky, you can end up in the third place as $150+200 = 200+150 > 300 > 100+100$. It can be proven, that you can not finish fourth.