Tractor

On a field, there are two stacks of hay bales.

The first stack contains n bales, where the first bale is at the bottom, and the n^{th} bale is at the top. The i^{th} bale has weight a_i.

The second stack contains m bales, where the first bale is at the bottom, and the m^{th} bale is at the top. The j^{th} bale has weight b_j.

You want to transport the $n + m$ bales to the processing plant using a tractor with a total load limit w. In one trip, you may load bales from both stacks, but a bale cannot be loaded before the bales on top of it have been loaded. The total weight of the bales loaded into the tractor on each trip must not exceed w.

Determine the minimum number of trips required to clear the two stacks.

Input

The first line contains three integers representing the number of bales from the first stack n, the number of bales from the second stack m, and the load limit of the tractor w.

The second line contains n integers $a_1, \ldots, a_n$.

The third line contains m integers $b_1, \ldots, b_m$.

Output

The output consists of a single integer representing the minimum number of trips needed to transport all $n + m$ bales.

Constraints

- $1 \leq n, m \leq 2\,000$
- $1 \leq a_i, b_j \leq w \leq 10^9$

Subtasks

#	Points	Restrictions
1	2	$a_1 = a_2 = \ldots = a_n = b_1 = b_2 = \ldots = b_m$
2	3	$a_1 = a_2 = \ldots = a_n = 1$
3	7	$n, m \leq 7$
4	21	$n, m \leq 50$
5	30	$n, m \leq 500$
6	37	No further constraints.

Example

Input

```
4 5 10
4 3 7 5
3 4 3 6 2
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Output

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4
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Explanation

The minimum number of trips required to clear the two stacks is 4; this can be achieved in the following way:

- On the first trip, we take the following from the two stacks: the hay bales with weights a_4 and b_5 with a total weight of 7;
- On the second trip, the hay bales with weights a_3 and a_2 with a total weight of 10;
- On the third trip, the hay bales with weights a_1 and b_4 with a total weight of 10;
- On the fourth trip, the hay bales with weights b_3, b_2 and b_1 with a total weight of 10.