Problem I
Santa Claus

POTYCZKI ALGORYTMICZNE

The 3rd Universal Cup, Stage 40: Potyczki. Limits: 1024 MB, 1 s. *21.06.2025*

Santa Claus has a tough job: not only does he have to deliver presents to all the children on time, but he also must make sure that each child gets the right gift. Good children receive toys, tickets to the Algorithmic Engagement finals, or a bicycle, while naughty ones get a lump of coal or a Windows Vista installation.

To stay on schedule, this evening Santa Claus must deliver presents to exactly K children, but the elves forgot to label the presents with the recipients' names! Santa must figure it out himself — choose which K out of N presents to deliver, and assign them to K out of M waiting children.

Santa knows the quality j_i of each present (which may be positive or nonpositive), and the niceness g_i of each child (which may also be positive or nonpositive).

Santa would like to maximize the fairness of the gift assignment: if present i is given to child k, then the total fairness increases by $j_i \cdot g_k$.

Can you help him determine the maximum possible fairness of assigning exactly K presents?

Input

The first line contains three integers K, N, and M ($1 \le K, N, M \le 200\,000$, $K \le \min(N, M)$), representing the number of presents Santa wants to deliver today, the number of presents in the warehouse, and the number of children waiting for a present, respectively.

The second line contains N integers $j_1, \ldots, j_N$ ($-10^6 \le j_i \le 10^6$), representing the quality of the presents.

The third line contains M integers $g_1, \ldots, g_M$ ($-10^6 \le g_i \le 10^6$), representing the niceness of the children.

Output

Output a single integer — the maximum possible fairness of assigning K presents.

Example

For the following input:

```
3 3 5
2 -2 4
-10 0 -2 3 2
```

the correct output is:

```
36
```

For the input:

```
1 4 4
0 0 0 0
2 4 -2 0
```

the correct output is:

```
0
```

And for the input:

```
1 2 2
1 2
-1 -2
```

the correct output is:

```
-1
```

Explanation of the examples:

In the first example, all presents should be distributed as follows:

- The present with quality 2 should be given to the child with niceness 2.
- The present with quality -2 should be given to the child with niceness -10.
- The present with quality 4 should be given to the child with niceness 3.

The total fairness is $2 \cdot 2 + (-2) \cdot (-10) + 4 \cdot 3 = 36$.

In the second example, all presents in the warehouse are completely mediocre, so it doesn't matter which one is chosen or to whom it is given — the fairness will always be 0.

In the third example, all the children are naughty, and all the presents are attractive. The best we can do is to give the least attractive present to the least naughty child.