CODEFORCES
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🔍

PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   STANDINGS   CUSTOM INVOCATION

C. Choose the Different Ones!

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Given an array a of n integers, an array b of m integers, and an even number k.

Your task is to determine whether it is possible to choose **exactly** $\frac{k}{2}$ elements from both arrays in such a way that among the chosen elements, every integer from 1 to k is included.

For example:

- If $a = [2, 3, 8, 5, 6, 5]$, $b = [1, 3, 4, 10, 5]$, $k = 6$, then it is possible to choose elements with values $2, 3, 6$ from array a and elements with values $1, 4, 5$ from array b. In this case, all numbers from 1 to $k = 6$ will be included among the chosen elements.
- If $a = [2, 3, 4, 5, 6, 5]$, $b = [1, 3, 8, 10, 3]$, $k = 6$, then it is not possible to choose elements in the required way.

Note that you are not required to find a way to choose the elements — your program should only check whether it is possible to choose the elements in the required way.

Input

The first line of the input contains a single integer t ($1 \le t \le 10^4$) — the number of test cases. The descriptions of the test cases follow.

The first line of each test case contains three integers n, m, and k ($1 \le n, m \le 2 \cdot 10^5$, $2 \le k \le 2 \cdot \min(n, m)$, k is even) — the length of array a, the length of array b, and the number of elements to be chosen, respectively.

The second line of each test case contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^6$) — the elements of array a.

The third line of each test case contains m integers $b_1, b_2, \ldots, b_m$ ($1 \le b_j \le 10^6$) — the elements of array b.

It is guaranteed that the sum of values n and m over all test cases in a test does not exceed $4 \cdot 10^5$.

Output

Output t lines, each of which is the answer to the corresponding test case. As the answer, output "YES" if it is possible to choose $\frac{k}{2}$ numbers from each array in such a way that among the chosen elements, every integer from 1 to k is included. Otherwise, output "NO".

You can output each letter in any case (lowercase or uppercase). For example, the strings "yEs", "yes", "Yes", and "YES" will be accepted as a positive answer.

Example

```
input                                                          Copy
6
```

Codeforces Round 923 (Div. 3)
Finished

→ Practice?

Want to solve the contest problems after the official contest ends? Just register for practice and you will be able to submit solutions.

[Register for practice]

→ Virtual participation ⌄

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ Problem tags

[brute force] [greedy] [math]

No tag edit access

→ Contest materials

- Announcement (en)   ✕
- Tutorial   ✕

```
6 5 6
2 3 8 5 6 5
1 3 4 10 5
6 5 6
2 3 4 5 6 5
1 3 8 10 3
3 3 4
1 3 5
2 4 6
2 5 4
1 4
7 3 4 4 2
1 4 2
2
6 4 4 2
1 5 2
3
2 2 1 4 3
```

output   `Copy`

```
YES
NO
YES
YES
NO
NO
```

Note

In the first test case of the example, it is possible to choose elements equal to 2, 3, and 6 from array a and elements equal to 1, 4, and 5 from array b. Thus, all numbers from 1 to $k = 6$ are included among the chosen elements.

In the second test case of the example, it can be shown that it is not possible to choose exactly three elements from each array in the required way.

In the third test case of the example, it is possible to choose elements equal to 1 and 3 from array a and elements equal to 2 and 4 from array b. Thus, all numbers from 1 to $k = 4$ are included among the chosen elements.