Problem B. Minimize Median

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

You are given an array A containing N integers, each between 1 and M. N is **odd**.

You are also given an array $cost$ of length M.

In one move, you can do the following:

- Pick an index i $(1 \le i \le N)$ and an integer x $(1 \le x \le M)$
- Replace $A[i]$ with $\lfloor A[i]/x \rfloor$, for a cost of $cost[x]$.

Here, $\lfloor\rfloor$ denotes the floor function, i.e, $\lfloor y \rfloor$ is the largest integer that doesn't exceed y.

You can perform operations as long as their total cost doesn't exceed K.

Under this condition, find the minimum possible value of $median(A)$ that can be achieved.

As a reminder, $median(A)$ is the middle element of A when it is sorted. For example, $median([3, 1, 2]) = 2$.

Input

The first line contains a single integer T, the number of testcases. Then the testcases follow.

The first line of each test case contains three space-separated integers N, M, K.

The second line of each test case contains N space-separated integers $A[1], A[2], \cdots, A[N]$.

The third line of each test case contains M space-separated integers $cost[1], cost[2], \cdots, cost[M]$.

Constraints

- $1 \le T \le 10^5$
- $1 \le N \le 10^6$
- N is odd.
- $2 \le M \le 10^6$
- $0 \le K \le 10^9$
- $1 \le A[i] \le M$
- $1 \le cost[i] \le 10^9$
- The sum of N across all testcases doesn't exceed 10^6.
- The sum of M across all testcases doesn't exceed 10^6.

Output

For each testcase, print a single integer, the minimum possible median of A.

Example

standard input	standard output
3 3 5 0 2 5 2 3 2 4 6 13 3 5 3 2 5 3 3 2 4 6 13 3 5 6 2 5 2 3 2 4 6 13	2 2 1

Note

Test case 1: No moves can be made, so the answer is $median([2, 5, 2]) = 2$.

Test case 2: Perform the following move:

- Divide $A[3] = 3$ by $x = 2$. This sets $A[3] = 1$ for a cost of 2.

The answer is $median([2, 5, 1]) = 2$, which is optimal.

Test case 3: Perform the following moves:

- Divide $A[2] = 5$ by $x = 3$. This sets $A[2] = 1$ for a cost of 4.
- Divide $A[3] = 2$ by $x = 2$. This sets $A[3] = 1$ for a cost of 2.

The answer is $median([2, 1, 1]) = 1$, which is optimal.