

Matching

Given the height of N men and M women. We need to form X pairs of one man and one woman. H is the maximum height difference of a pair, $H = \max(\{|pair.manHeight - pair.womanHeight| \text{ for } X \text{ pairs}\})$. What is the minimum possible value of H ?

Input

- The first line contains three integers N, M, X ($1 \leq N \leq 10^5$).
- The second line contains N integers indicating the height of N men.
- The third line contains M integers indicating the height of M women.

Output

The minimum possible value of H .

Note: 50% test case: $X = N = M$

Sample

Input	Output
5 6 3 150 180 165 184 156 152 168 175 159 168 190	3
5 5 5 150 180 165 184 156 152 168 175 159 168	12