Two Pointers (easy version)

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Alice and Bob are visiting cities on a very long road that stretches from points -10^9 to 10^9. Alice starts at point A while Bob starts at point B.

There are n cities to visit, where the i-th city is at point t_i. Each city must be visited by Alice or Bob at least once, but they can be visited in **any order**.

What is the minimum **total** distance Alice and Bob travel?

Input

Each test consists of multiple test cases. The first line contains a single integer T ($1 \le T \le 100$), the number of test cases. Each test case is formatted as follows:

The first line contains three space-separated integers n, A, and B ($1 \le n \le 2 \cdot 10^5$, $-10^9 \le A, B \le 10^9$) – the number of cities, Alice's position, and Bob's position, respectively.

The second line contains n space-separated integers $t_1, t_2, \ldots, t_n$ ($-10^9 \le t_i \le 10^9$) – the positions of the cities.

It is guaranteed that the sum of n over all test cases is at most $2 \cdot 10^5$.

Output

For each test case, print the answer on a separate line.

Output the minimum total distance that Alice and Bob must travel to visit all cities.

Scoring

Subtask 1 (16 points): $n \le 20$, $-10^6 \le A, B, t_i \le 10^6$

Subtask 2 (36 points): $n \le 5000$, $-10^6 \le A, B, t_i \le 10^6$

Subtask 3 (21 points): $n \le 5000$

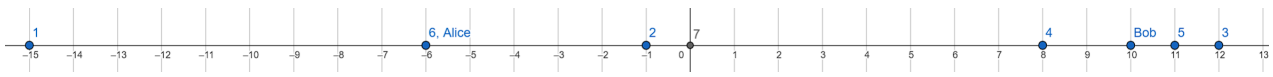
Subtask 4 (27 points): No additional constraints

Example

standard input	standard output
4 7 -6 10 -15 -1 12 8 11 -6 0 2 -1000000000 -1000000000 1000000000 -1000000000 1 4 6 1 4 727 137 39 852 201 696	24 2000000000 3 413

Note

In the first test case: There are 7 cities. Alice starts at coordinate -6 and Bob starts at point 10.



(Use this link if the image is not clear: https://ibb.co/RSgbbJW)

One possible optimal way to visit all cities is as follows ($i \xrightarrow{x} j$ means to go from i to j, driving x distance):

- Alice visits the cities (given in order): $A \xrightarrow{0}$ city 6 $\xrightarrow{9}$ city 1.
- Bob visits the cities (given in order): $B \xrightarrow{1}$ city 5 $\xrightarrow{1}$ city 3 $\xrightarrow{4}$ city 4 $\xrightarrow{8}$ city 7 $\xrightarrow{1}$ city 2.

Alice drives for a total of $0 + 9 = 9$ distance and Bob drives for a total of $1 + 1 + 4 + 8 + 1 = 15$ distance. The total distance driven by both Alice and Bob is $9 + 15 = 24$. It can be proven that there is no way to drive less than 24 distance, thus the answer is 24.

In the second test case, Alice and Bob are both already at city 2. Bob can visit the city 2 then city 1, driving $2,000,000,000$ total distance. Note that Alice can choose to do nothing.

In the third test case, Alice can visit the only city, driving from point 4 to point 1 for 3 distance. Bob does nothing.