Problem G. The Syrup Stirrer

Sepovsky is a retired hardworking man. Retirement life is boring for him, and he spends his time watching football and making syrup. One cold winter day, while he was stirring the syrup, his eyes fell on the shelf of syrups and a fresh idea came to his mind to waste his time.

Sepovsky's cabinet consists of two stacked shelves. Sepovsky has n types of syrup, each with its own unique taste, and there is exactly one bottle of each syrup taste in each shelf. So there are n distinct tastes numbered 1 through n and each taste appears exactly once in each of the two shelves. Denote the taste of the i-th bottle of the first shelf as ca_i and the taste of the i-th bottle of the second shelf as cb_i. Now Sepovsky wants to select each syrup taste an integer value from 1 to n, distinct for all the tastes. After that he will put down the values in each syrup bottle on the shelves. Denote the number of the i-th bottle of the first shelf as $numa_i$ and the number of the i-th bottle of the second shelf as $numb_i$. Note that each taste from 1 to n should have a distinct value, and the same taste which appears in both shelves has the same value.

After labelling each bottle, the Sepovskyness of the two shelves is calculated as:

$$\sum_{i=1}^{n} |numa_i - numb_i|$$

Find the highest possible Sepovskyness.

Input

The first line contains a single positive integer t ($1 \le t \le 10000$) — the number of test cases.

For each test case, the first contains a single integer n ($2 \le n \le 2 \times 10^5$) — the number of syrup tastes.

The second contains n integers ca_1, ca_2, ..., ca_n ($1 \le ca_i \le n$) the taste of each bottle of the first shelf. It is guaranteed that ca is a permutation.

The third contains n integers cb_1, cb_2, ..., cb_n ($1 \le cb_i \le n$) the taste of each bottle of the second shelf. It is guaranteed that cb is a permutation.

It is guaranteed that the sum of n over all test cases does not exceed 2×10^5.

Output

For each test case, print a single integer — the highest possible Sepovskyness.

Examples

test	answer
3 6 1 5 4 3 2 6 5 3 1 4 6 2 6 3 5 4 6 2 1 3 6 4 5 2 1 1 1 1	18 10 0