Magic Ritual

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

At the Academy of Archmages, there is a special tradition: every graduate must master the ritual of sorting magical spheres perfectly.

On a long altar, there are n spheres placed from left to right, each numbered. Each sphere has a given strength, and to successfully complete the ritual, they must be arranged in non-decreasing order of strength. To achieve this, spheres can be swapped, and in one action, any two spheres can be exchanged.

However, the magical flow between two positions i and j is unstable, and swapping the spheres at these positions requires spending $(i - j - 2)^2$ units of mana.

The ritual is considered complete when the spheres are arranged in the correct order. You need to conduct the ritual in such a way that the total mana expenditure is minimized.

You will need to answer several independent queries about conducting the rituals.

Input

The first line contains an integer t ($1 \le t \le 2 \cdot 10^5$) — the number of rituals.

The descriptions of the rituals follow.

In the first line of each ritual, there is a number n ($1 \le n \le 2 \cdot 10^5$) — the number of spheres.

In the second line, n integers $a_1, a_2, \ldots, a_n$ are given ($0 \le a_i \le 10^9$) — the strength of each sphere.

It is guaranteed that the sum of n across all rituals does not exceed $2 \cdot 10^5$.

Output

For each ritual, output a single integer — the minimum mana expenditure to complete the ritual.

Example

standard input	standard output
3 3 3 2 1 3 2 1 2 4 4 3 2 1	0 1 2