

Best Sum



You are given two arrays A and B of length N . Let S be the set of integers from 1 to N . Can you find the maximum possible value of $(A_{i_1} + A_{i_2} + \dots + A_{i_k})^2 + (B_{i_1} + B_{i_2} + \dots + B_{i_k})^2$ where $\{i_1, i_2, \dots, i_k\}$ is a non-empty subset of S ?

Input Format

The first line contains a single integer T , denoting the number of test cases.

T testcases follow, each test case given in following format.

```
N
A1 A2 ... AN
B1 B2 ... BN
```

Output Format

For each test case, output the maximum possible value in one line.

Constraints

$$1 \leq T \leq 10$$

$$1 \leq N \leq 1000$$

$$-10^6 \leq A_i, B_i \leq 10^6$$

Sample Input

```
1
2
-1 5
4 -5
```

Sample Output

```
50
```

Explanation

All possible non-empty subsets for $N = 2$ of $S = \{1, 2\}$ are $\{1\}$, $\{2\}$ and $\{1, 2\}$. The maximum possible values of the above equation now are

- $(-1)^2 + (4)^2 = 17$
- $(5)^2 + (-5)^2 = 50$
- $(-1 + 5)^2 + (4 - 5)^2 = 17$

hence 50.

Timelimits

Timelimits for this challenge can be seen [here](#)