Best Sum

Problem Statement

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 $(A_{i1}+A_{i2}+...+A_{ik})^2+(B_{i1}+B_{i2}+...+B_{ik})^2$ where {i1,i2...ik} is a non-empty subset of S?

Input

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

Constraints

$1 <= T <= 30$
$1 <= N <= 1000$
$-10^6 <= A_i, B_i <= 10^6$

Output

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

Input	Output
3	50
2	2060801650
-1 5	2562486632
4 -5	
3	
-23811 30333 -4664	
7711 6868 27644	
3	
2082 -16541 -31115	
29658 -9930 2306	

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.

Source: Hackerrank 20/20 world finals