Problem A
Area

Time limit: 2 seconds
Memory limit: 512 megabytes

Problem Description

This problem is modified from problem A in CodeForces Round 644 (Div. 3), see:
https://codeforces.com/contest/1360/problem/A

Now, we ask you to place a rectangular $a \times b$ house and a rectangular $c \times d$ house on a *square* land with the minimum area. The houses must not overlap. You may rotate the houses and the land, but you must keep the sides of the houses parallel to the sides of the desired *square* land. Please write a program to output the minimum area of the land satisfying the constraints above.

Note: a *square* is a rectangle with four equal sides.

Input Format

The first line contains an integer T indicating the number of testcases.

A test case is a line containing 4 space-separated positive integers a, b, c, and d. Your task is to find the minimum area of the square land such that you may put a rectangular $a \times b$ house and a rectangular $c \times d$ house on.

Output Format

For each test case, output the minimum area of the desired square land.

Technical Specification

- $0 < T \leq 10,000$

- $a, b, c, d \in [1, 10^9]$

- You might need to use a 64-bit integer to represent the answer.

Sample Input 1

```
10
1 2 3 4
5 6 7 8
9 1 2 3
4 5 6 7
8 9 1 2
3 4 5 6
7 8 9 1
2 3 4 5
6 7 8 9
1 2 1 2
```

Sample Output 1

```
16
144
81
100
81
64
81
36
196
4
```