

# CSULA PROGFEST 2014

## Problem 2 The Coverup

Drinking a cup of warm, fuzzy hot chocolate on a typical winter day may be one of the enjoyable things to do. However, chocolate stains are notoriously difficult to clean up. Byran's parents specifically told him not to drink hot chocolate in his room, which has white walls. Obviously, Bryan ignored their warnings, and did the exact opposite. While sipping on his hot chocolate, he sneezed, and hot chocolate was spilled all over his room. He scrubbed and cleaned as hard as he could, but several small stains still remain on the wall. Unable to clean up the stains, Bryan wants to buy some posters to cover up the stains to avoid the fallout from his parents. His local poster shop only sells square posters. What is the smallest square poster he can buy to cover it up? Assume that the stains are points on the integer lattice in the plane. The poster can be oriented in any way. Your program will find the area of the smallest square poster that will cover up all the stains.

### Input

The first line of input contains a single integer  $T$  expressed in decimal with no leading zeroes, denoting the number of test cases to follow. The subsequent lines of input describe the test cases.

Each test case begins with a single line, containing a single integer  $n$  expressed in decimal with no leading zeroes, the number of points to follow; each of the following  $n$  lines contains two integers  $x$  and  $y$ , both expressed in decimal with no leading zeroes, giving the coordinates of one of your points.

You are guaranteed that  $T \leq 30$  and that no data set contains more than 30 points. All points in each data set will be no more than 500 units away from  $(0,0)$ .

### Output

Print, on a single line with two decimal places of precision, the area of the smallest square containing all of your points.

### Sample Input

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```
2
4
-2 -2
2 -2
2 2
-2 2
4
10 2
10 -2
-10 2
-10 -2
```

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### Sample Output

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16.00
288.00
```

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