Johnny and the Glue

Little Johnny decided he needed to stick an open metal box to the floor in the hall of his parents' house, so that all guests coming in would trip on it. He knew that as soon as his parents saw what he had done, they would try to remove it, and he wasn't going to stand for this. So, he chose the strongest glue in his possession and left lots of dabs of it on the floor (from our point of view, these can be regarded as points). Now, the only question that remained was how to stick the box onto the floor. Johnny is very particular about the way he does this: the box is always stuck face down, so that it only touches the floor on the four edges of the rectangle that forms its base. He would like each of these edges to make contact with at least two dabs of glue. Furthermore, he doesn't want any of the dabs to stay outside the box, since this would ruin the fun (there is no way you can trip someone up, if you've glued them to the floor, is there?).

Obviously, Johnny can sometimes reach his objective in more than one way (especially since he has prepared boxes of all possible dimensions for his act of mischief). Depending on how he does this, a different section of floor will be covered by the box. Determine in how many ways Johnny can choose the section of floor to be covered by the box when gluing.

Input

The input begins with the integer t, the number of test cases. Then t test cases follow.

The first line of each test case contains positive integer n<=10000 - the number of dabs of glue on the floor. The next n lines contain two integers, x y (-15000<=x,y<=15000), representing the x and y coordinates of the dabs (given in the order in which they were placed by Johnny ;).

Output

For each test case output the number of different sections of floor Johnny may choose to cover (possibly 0).

Example

Sample input:
```
1
8
1 0
1 4
0 3
5 4
5 0
6 1
6 3
0 1
```

Sample output:
```
2
```