The province of Saskatchewan is surveyed in *sections*. A section is a square mile of land. Grid roads delimit sections; there is one north-south and one east-west road exactly every mile. (Complications arise because of the curvature of the earth but you can disregard these and assume that the province is a plane.) The provincial border is a polygon whose vertices correspond to the intersections of grid roads. However, the edges do not necessarily follow grid roads; some sections are cut by the border. Your job is to compute how many sections are completely within a province like Saskatchewan.

Input

The input begins with a single positive integer on a line by itself indicating the number of the cases following, each of them as described below. This line is followed by a blank line, and there is also a blank line between two consecutive inputs.

Standard input contains a series of no more than 100 coordinate pairs, one pair per line. These coordinates give the vertices of the perimeter of the province; the border is formed by connecting them in order. All coordinates are in the first quadrant; they range from 0 to 100,000.

Output

For each test case, the output must follow the description below. The outputs of two consecutive cases will be separated by a blank line.

Your output should be a single integer: the number of sections (i.e. unit squares with corners at integer coordinates) fully contained within the province.

Sample Input

```
1

0 0
0 100000
99999 100000
100000 0
```

Sample Output

```
9999900000
```