

Lattice Point Leslie

Leslie is a rather unassuming ant who lives on a Cartesian plane. To stay in shape, she walks. Incidentally, her path always traces a simple polygon, in counter-clockwise order, starting at her home, the origin and ending there as well. (After all, this is Leslie's version of the world!) In Leslie's world, particular coordinates, lattice points are of particular interest because she can only get food at lattice points. (Lattice points in the Cartesian plane are those with integer coordinates. So, (.5, 1) isn't a lattice point, but (1, 2) is.)

The Problem

Given a list of the points Leslie walks to defining her polygonal path, in order, determine the total number of lattice points she visits, including her home, the origin.

The Input

The first line of the input file will contain a single positive integer, n ($n < 50$), representing the number of Leslie's walking paths to consider. The first line of each test case will contain a single positive integer, p ($p \leq 10$), the number of sides on Leslie's walking path. The following $p-1$ lines will contain two integers, x_i ($-10^{18} \leq x_i \leq 10^{18}$) and y_i ($-10^{18} \leq y_i \leq 10^{18}$), representing the x and y coordinates of the end of the i^{th} line segment of her walking path. The endpoint of her last line segment is (0,0).

The Output

For each walking path, output the total number of lattice points Leslie visits on her journey, including her home. You are guaranteed that none of the answers will exceed 4×10^{18} .

Sample Input

```
2
4
2 4
0 5
-3 2
3
10 1
2 10
```

Sample Output

```
7
4
```