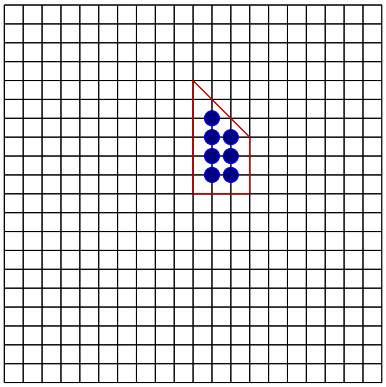
Fence X50966_en

John Zynoulus has a garden full of blue-black flowers. They are arranged in a square grid pattern.
However, Measharan scientists warn that there is a risk of a red rabbit invasion. The rabbits like to eat blue-black flowers, so John needs to put a fence to protect some of our flowers. For reasons of simplicity and aesthetics, we have decided that our fence will have a polygonal shape, and each of its vertices will be placed where a flower originally was. For example, the fence below protects 7 blue-black flowers from red rabbits.



John has designed the shape of the fence, but has some problems with calculating the number of blue-black flowers inside it. Can you help him?

Input

The first line contains the number of vertices N, $3 \leq N \leq 100000$.
i-th of the following next N lines contains coordinates x_i, y_i of the i-th vertex of the polygon, where $|x_i|, |y_i| \leq 10000$. Each pair (x_i, y_i) is distinct, and edges of our polygon don't intersect (except in vertices).

Output

Output the number of grid points inside the polygon.

Sample input 1

```
4
0 0
3 0
3 3
0 6
```

Sample output 1

```
7
```

Problem information

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