Genetic Engineer

Kavraz is a very famous genetic engineer working on the genetics of seeds and trying to develop crops that are resistant to various conditions.

In order to do the experiments, Kavraz planted his new seeds in a rectangular field in a way that **no seeds are on top of each other**. In order for the study to be successful, these seeds must not be exposed to sunlight in the first months. To achieve this, he wants to cover the field with a light-proof tarpaulin.

The tarpaulin manufacturers only produce their tarpaulins in a rectangular shape and they sell **a maximum of 2 pieces** to a customer to avoid stockpiling this particular product. Branda's price per unit is 1₺.

Unfortunately Kavraz is in financial trouble, so he gives you the coordinates of the seeds *(all integers)* and asks you to calculate how much **at least** he needs to spend on the tarpaulin.

Note-1: Since Kavraz likes everything in order, the edges of the tarpaulin are laid on the field in a way that is parallel to the edges of the field.

Note-2: There is a critical error in the area calculation algorithm of the tarpaulin company. If the side length is not an integer, it rounds down the length. For example, for a canvas with a side length of (0.5, 10), it is possible to purchase the canvas without paying anything. The price of a canvas with side lengths of (1.5, 10) units is equal to the cost of a canvas with side lengths (1, 10) units.

Submit Solution

Points: 1

Time limit: 1.0s
Java 8: 3.0s
Python: 5.0s

All submissions

Best submissions

Input Format

- Multiple test cases are given for each input.
- An integer $\mathbf{T}$, representing the number of test cases will be given in the first line.
- For each test case in the input, N integers will be given in one line, and integers $\mathbf{x_i}$ and $\mathbf{y_i}$, which represent the coordinates of the seeds, will be given in the following N lines.

Constraints

- $\mathbf{1 \leq T \leq 2 * 10^5}$
- $\mathbf{1 \leq N_t \leq 2 * 10^5}$
- $\mathbf{\sum_{t=1}^{T} N_t \leq 2 * 10^5}$
- $\mathbf{0 \leq x_i, y_i \leq 10^9}$

Output Format

- For each test case in the input, write the minimum price that should be paid for the tarpaulins on a new line.

Sample Input 0

Copy

```
1
1
10 3
```

Sample Output 0

Copy

```
0
```

Sample Input 1

Copy

```
1
2
7 9
14 1
```

Sample Output 1

Copy

```
0
```

Sample Input 2

Copy

```
3
4
14 8
4 9
2 8
15 8
4
10 0
9 2
4 5
12 9
4
8 3
2 5
0 1
6 3
```

Sample Output 2

Copy

```
0
27
8
```

Sample Input 3

Copy

```
3
5
8 5
0 13
2 12
1 15
3 1
5
9 10
10 12
1 13
10 8
11 11
5
14 15
6 1
0 12
8 3
2 7
```

Sample Output 3

Copy

```
26
8
78
```