

The Dutch Farmer (tulips2)

Did you know? Tulips were so valuable in the 17th century that they caused an economic phenomenon known as *Tulip Mania* - some bulbs were worth more than houses.



Figure 1: A tulip bouquet.

A field of tulips is represented as an axis-aligned rectangle, with irrigation sprinklers placed on its four sides. These sprinklers spray a fertilizing solution over the field.

The Dutch farmer, Jakob, wants to determine how many tulips will ripen faster because they are planted in a special fertilized zone.

There are N tulips planted at locations (X_i, Y_i) for $i = 0 \dots N - 1$. A tulip is considered to be in the fertilized zone if, together with the four corners of the rectangle, it forms

- two acute-angled triangles, and
- two obtuse-angled triangles.

Your task is to count how many tulips meet this condition.

👉 Among the attachments of this task you may find a template file `tulips2.*` with a sample incomplete implementation.

Input

The input file consists of:

- A line containing integers `topLeftX`, `topLeftY`.
- A line containing integers `topRightX`, `topRightY`.
- A line containing integers `bottomRightX`, `bottomRightY`.
- A line containing integers `bottomLeftX`, `bottomLeftY`.

- A line containing integer N .
- N lines, the i -th of which consisting of integers X_i, Y_i .

Output

The output file must contain a single line consisting of integer K , the number of tulips in the special zone.

Constraints

- All points, including the rectangle's corners, lie within the geometric space $[-1500, 1500] \times [-1500, 1500]$.
- The rectangle is axis-aligned, that is, the sides of the rectangle are parallel to the axes.
- $1 \leq N \leq 100\,000$.
- All tulips are inside the rectangle. There is no tulip located on a side of the rectangle.
- All tulip locations are unique (there are no identical (X_i, Y_i) positions).

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

- **Subtask 1** (0 points) Examples.

- **Subtask 2** (100 points) No additional limitations.


Examples

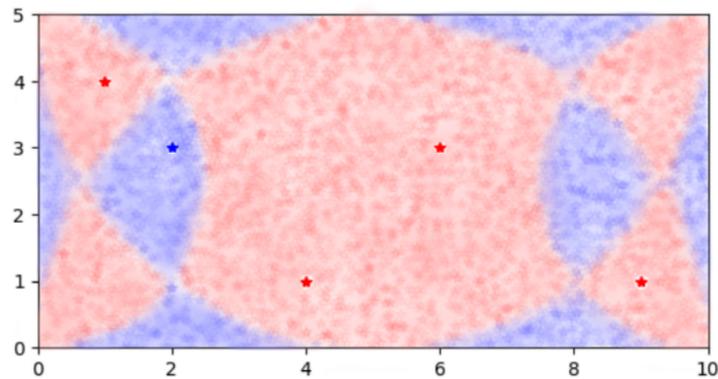
input	output
<pre> 0 5 10 5 10 0 0 0 5 2 3 1 4 4 1 9 1 6 3 </pre>	<pre> 4 </pre>

input	output
0 35	4
35 35	
35 0	
0 0	
10	
17 8	
16 5	
32 27	
18 32	
8 18	
17 30	
14 19	
5 11	
2 32	
2 11	

Explanation

In the following figures, the **red** areas are covered with fertilizer, while the **blue** areas are not.

In the **first sample case**, the only tulip outside the fertilized area is located at position (2, 3).



In the **second sample case**, the tulips inside the fertilized area are located at the points: (32, 27), (14, 19), (5, 11), and (2, 32).

