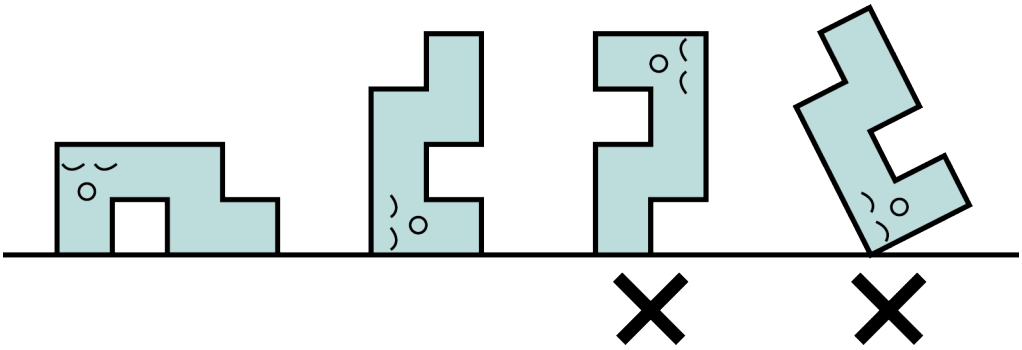
Desk

Description

Peter50216 (or Peter) likes to sleep on desks. We treat the shape of Peter's body as a simple polygon, and we assume Peter's body has equivalent density everywhere. In this point of view, sleeping on a desk is just like placing such simple polygon on a horizontal line.

Peter can adjust his sleeping position by rotating his body. Peter wants to know the number of different sleeping positions that are stable. Here we define a sleeping position as stable if Peter will not be rotated caused by its weight, even if we slightly push him anywhere with a small enough force.



Input

The first line contains a integer T indicating the total number of test cases. Each test case starts with a single integer n, the number of vertices of the polygon. The following n pairs of integers x_i, y_i, are the coordinates of the vertices in order.

- $1 \leq T \leq 1,000$
- $3 \leq n \leq 1,000$
- $|x_i|, |y_i| \leq 10,000$
- The area of Peter's body is strictly bigger than 0

Output

For each test case, output the number of different sleeping positions for Peter.

Sample Input

```
3
4
0 0
1 0
1 2
0 2

4
0 0
1 0
2 2
1 2

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

Sample Output

```
4
2
3
```