H for Hard

Description

Hanhan, a talented little boy, never stuck on any problem. He thinks all the problems are too easy to be a problem. Thus, he starts to invent some problems to challenge himself. However, none of them can take hanhan more than 1 milisecond to think.

After inventing millions of problems, hanhan finally finds a problem which takes him about 10 miliseconds to figure our the solution. Eventually, hanhan realizes that not those problems are too easy, but he's too gifted. Therefore, he gives the problem to you and doubts whether you can solve it.

The problem is: on an island, N people are going to divide it into several region and own each region. The discipline of dividing the island is that for each part of the island, it belongs to the person who is nearest to it. Formally, we can format the island on a $OXY-$plane, and the island is a rectangle occupying $[0, W] \times [0, H]$. Each person is on the island with distinct position. Thus, you need to find the area of all the region belonging to each person.

Input

The first line contains an integer T indicating the total number of test cases. For each test case: First line contains three positive integer N, W and H. Following N lines, each contains 2 integers X_i, Y_i indicating the position of i-th person.

- $1 \leq T \leq 10$
- $1 \leq N \leq 500$
- $1 \leq W, H \leq 10^9$
- $0 \leq X_i \leq W$
- $0 \leq Y_i \leq H$
- In a test case, all (X_i, Y_i) are distinct.
- There will be at most 2 testcases with $N \geq 10$

Output

For each test case, please output N line. For i-th line, output the area belonging to i-th person.

Absolute or relative error less than 10^{-7} is considered correct.

Sample Input

```
2
1 1 1
1 1
2 3 3
1 1
2 2
```

Sample Output

```
1
4.5
4.5
```