# An Optical Experiment

## Description

As we know light travels in straight lines, in order to verify the nature, the students of Huade School of Applied Technology of Harbin Institute of Technology do the following Optical Experiment in their physics class.

In the plane, there is a light lies in (x0,y0), y0 > 0, and put an infinite light barrier at position y1 in vertical axis, open n crevices in the barrier, light will go through the crevices and project to the horizontal axis, now you assignment is check whether the length of light on the horizontal axis is fit that light travels in straight lines.

## Input

There are many test cases, each test case begin with four numbers x0, y0, y1, n (y0>y1>0), defined as above, and next n lines, each contain two float numbers, means the beginning position and ending position of the crevice.

## Output

For each test case output the length of the light on the horizontal axis, round to 2 digits after the decimal point.

## Sample Input

2 2 1 1

1 2

2 2 1 3

-1.1 3.1

-10.8 -3.3

5.2 7.9

## Sample Output

2.00

28.80