

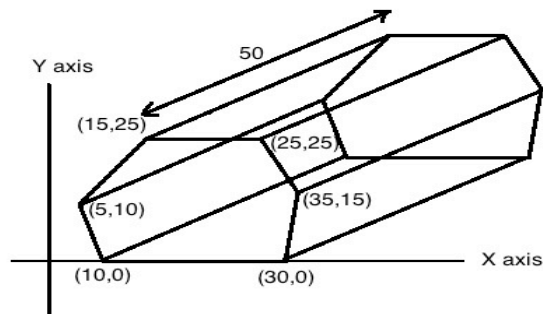
E. Aquarium Tank

You just bought an “artistic” aquarium tank that has an interesting shape, and you poured L liters of water into the tank. How high is the water in the tank?

When you look at this tank from one side, it has the shape of a convex polygon. This polygon is the cross section for any slice parallel to this side. This polygon has exactly two vertices on the table (y -coordinates are 0), and all other vertices have positive y -coordinates. There are also exactly two vertices with maximum y -coordinates, and water is poured into the opening between these two vertices. This aquarium tank has a breadth of B centimeters. The tank is glued to the table, so no matter what shape it has, it keeps its position and does not tip over.

All coordinates in this problem are given in centimeters. It should be noted that a cubic meter is equivalent to 1,000 liters.

An illustration showing the configuration of the tank of the first sample input is given below:



Input:

The input may consist of multiple test cases. The first line for each case contains an integer N ($4 \leq N \leq 100$) giving the number of vertices in the polygon. The next line contains two numbers B and L , where $1 \leq B \leq 1,000$ giving the breadth of the aquarium tank and $0 \leq L \leq 2,000$ the number of liters of water to pour into the tank. The next N lines each contain two integers, giving the (x, y) coordinates of the vertices of the convex polygon in counterclockwise order. The absolute values of x and y are at most 1,000. You may assume that the tank has a positive capacity, and of course you never pour more water than the tank can hold. Process until an end-of-file is detected.

Output:

Print the height of water (in centimeters) in the aquarium tank on a line rounded to 4 decimal places. Input will be constructed so that rounding will not cause problems for values that are sufficiently close to correct. Follow this format exactly: “Case”, one space, the case number, a colon and one space, and the answer for that case with no trailing spaces.

Sample Input**Sample Output**

6	Case 1: 25.0000
50 28.175	Case 2: 19.7375
25 25	
15 25	
5 10	
10 0	
30 0	
35 10	
9	
30 70	
110 70	
100 80	
80 80	
-10 60	
-40 30	
-40 25	
20 0	
100 0	
120 10	

Note: The figure has a coordinate (35,15) which is different than the corresponding coordinate (35,10) in the first Sample Input. The Sample Output works with the Sample Input coordinate.