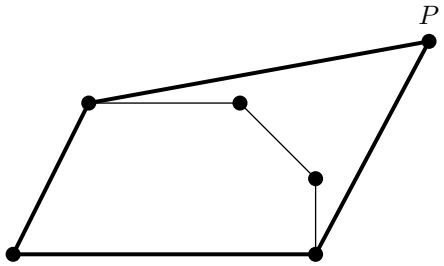
Problem F. Fiber Shape

Time limit:	3 seconds
Memory limit:	512 megabytes

Imagine a board with n pins put into it, the i-th pin is located at (x_i, y_i). For simplicity, we will restrict the problem to the case where the pins are placed in vertices of a convex polygon.

Then, take a non-stretchable string of length l, and put it around all the pins. Place a pencil inside the string and draw a curve around the pins, trying to pull the string in every possible direction. The picture below shows an example of a string tied around the pins and pulled by a pencil (a point P).



Your task is to find an area inside this curve. Formally, for a given convex polygon S and a length l let's define a *fiber shape* $F(S, l)$ as a set of points t such that the perimeter of the convex hull of $S \cup \{t\}$ does not exceed l. Find an area of $F(S, l)$.

Input

The first line contains two integers n and l ($3 \le n \le 10^4$; $1 \le l \le 8 \cdot 10^5$) — the number of vertices of the polygon S and the length of the string. Next n lines contain integers x_i and y_i ($-10^5 \le x_i, y_i \le 10^5$) — coordinates of polygon's vertices in counterclockwise order. All internal angles of the polygon are strictly less than π. The length l exceeds the perimeter of the polygon by at least 10^{-3}.

Output

Output a single floating-point number — the area of the fiber shape $F(S, l)$. Your answer will be considered correct if its absolute or relative error doesn't exceed 10^{-6}.

Examples

standard input	standard output
3 4 0 0 1 0 0 1	3.012712585980357
4 5 0 0 1 0 1 1 0 1	5.682061989789656
5 17 0 0 2 -1 3 0 4 3 -1 4	37.719371276930820

Note

The following pictures illustrate the example tests.

