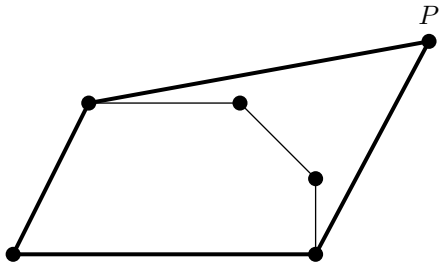
# Problem F. Fiber Shape

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 $\pi$. 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<br>0 0<br>1 0<br>0 1 | 3.012712585980357 |
| 4 5<br>0 0<br>1 0<br>1 1<br>0 1 | 5.682061989789656 |
| 5 17<br>0 0<br>2 -1<br>3 0<br>4 3<br>-1 4 | 37.719371276930820 |

## Note

The following pictures illustrate the example tests.