

K Kite Construction

Time limit: 4s

Summer is coming up, and you and your friends love to fly kites at the beach. You plan to make n new kites this year, and paint them in some range of colours. For this, you already have a practically unlimited amount of canvas and paint, but the limiting factor is where you can put the painted kites while they dry.

To hang out the kites for drying, you found a square field with side length ℓ . On each of the four sides of the field, there are n poles. The corners of the field are at coordinates $(0, 0)$, $(\ell, 0)$, $(0, \ell)$, and (ℓ, ℓ) , and you know the coordinates of the poles in this coordinate system. There are no poles exactly on a corner of the square, and no poles inside the square.



Neatly folded canvases and paint, waiting to be transformed into colourful kites.
Image generated using DALL · E 3

Since you are planning to make as many kites as there are poles on each side of the field, and each kite has four corners, you want to attach each of the corners of each kite to a pole from each of the four sides. Additionally, each pole should be attached to exactly one corner of a kite. Of course, larger kites are more fun, so you want to maximize the total area of the kites.

Although you vaguely remember from geometry class that a kite has some special properties, you decide to use your artistic freedom and just allow any (convex) quadrilateral as the shape of your kites.

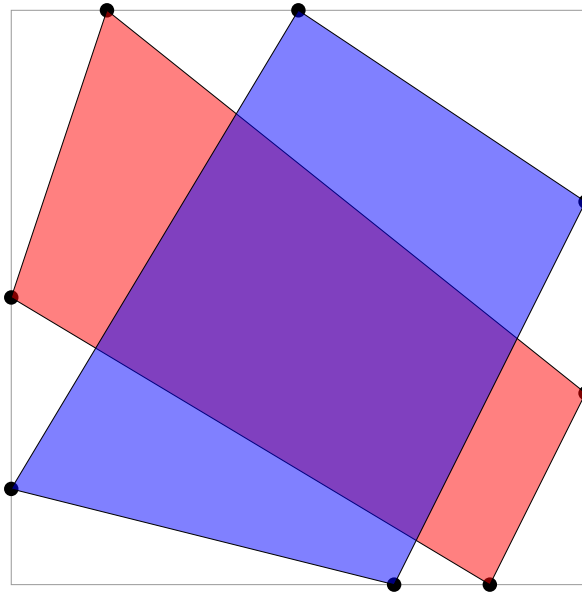


Figure K.1: Visualization of the second sample input, where the grey square indicates the 6×6 square field, the black dots indicate the poles, and the coloured rectangles indicate a possible placement of the kites. Note that this is *not* the configuration that maximizes the total area of the kites (the red kite has an area of 16, the blue kite has an area of 19.5, for a total area of 35.5).

Input

The input consists of:

- One line with two integers n and ℓ ($1 \leq n \leq 10^5$, $1 \leq \ell \leq 10^6$), the number of kites you want to make and the side length of the square field.
- $4n$ lines, each with two integers x and y ($0 \leq x, y \leq \ell$), the coordinates of the poles on the sides of the square.

It is guaranteed that all poles lie on the boundary of the square and n poles lie on each side of the square, and no poles lie on a corner of the square. It is also guaranteed that no two poles are at the same location.

Output

Output the maximum total area of the n kites.

Your answer should have an absolute or relative error of at most 10^{-9} .

Sample Input 1

```
1 4
2 4
0 2
2 0
4 2
```

Sample Output 1

```
8
```

Sample Input 2

```
2 6
0 3
0 1
6 2
4 0
3 6
6 4
1 6
5 0
```

Sample Output 2

```
41.5
```