

Problem A. Approximate Bounding Box

Input file: `approximate.in`
Output file: `approximate.out`
Time limit: 2 seconds
Memory limit: 256 megabytes

Bounding box problem is stated as follows: given n points (x_i, y_i) on a plane, find the smallest possible rectangle with edges parallel to coordinate axes that contains all the given points. The problem can be easily solved by finding minimal and maximal coordinates of points: $x_L = \min\{x_i\}$, $x_R = \max\{x_i\}$, $y_B = \min\{y_i\}$, $y_T = \max\{y_i\}$, the corresponding rectangle has corners at (x_L, y_B) , (x_L, y_T) , (x_R, y_B) , and (x_R, y_T) .

However the problem becomes more difficult if the points are given approximately. In this problem each point can be at any location inside a circle with center at (x_i, y_i) and radius r .

Given approximate locations of points find the maximal possible area of their bounding box.

Input

The input file contains multiple test cases.

The first line of each test case contains two integers: n and r ($2 \leq n \leq 100\,000$, $1 \leq r \leq 10^9$).

Each of the following n lines contain two integers x_i and y_i : the coordinates of approximate locations of the points ($-10^9 \leq x_i, y_i \leq 10^9$).

The sum of n for all test cases in the input file doesn't exceed 100 000. There are at most 10 test cases.

The last test case is followed by two zeroes that should not be processed.

Output

For each test case output one floating point number: the maximal possible area of the bounding box for the points if each of them is located somewhere inside a circle of radius r centered in its approximate location.

Your answer must be within 10^{-9} relative or absolute error.

Examples

<code>approximate.in</code>	<code>approximate.out</code>
4 1 0 0 1 1 1 0 0 1 0 0	9.0

In the given example the bounding box has area of 9 if, for example, points are located at $(0, -1)$, $(1, 2)$, $(2, 0)$ and $(-1, 1)$, correspondingly.