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Assignment 3 - 2D-Array

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Calculating area

Description

On a canvas, we draw n shapes and calculate the area of these n shapes. Here we use 2-dimensional orthogonal coordinates to identify the locations of geometrical shapes. There are two types of drawing operations:

- Draw a circle at (x, y) as the center and with the radius of 1 in black color.
- Draw a square at (x, y) as the center and with the side length of 2 in black color. Note that the sides of the square are parallel to the two axes of the coordinate system.

For example, n is 2, which means drawing 2 shapes on the canvas, let's assuming one is a circle with radius 1 at position (1,1) and the other is a square with side length 2 at position (0,0). As shown in the following figure:

You are required to calculate the area of the shape you draw.

Input

The first line contains an integer $n(1 \leq n \leq 1000)$, indicating the number of operations.

The following n lines each line contains three integers op, x , and y . The op value specifies the type of the operations (as illustrated above, type 1 and 2). It is guaranteed that $0 \leq |x| \leq 100, 0 \leq |y| \leq 100$. You don't need to care about whether the shape will be out of the boundary of the canvas. You may imagine that the canvas is large enough to include all shapes.

Output

Output the answer in a single line, the answer should round to the fifth position after the decimal point.

Input #1

Copy

2
1 1 1
2 0 0

Output #1

Copy

6.35619

Input #2

Copy

3
1 0 0
2 -2 -2
1 0 0

Output #2

Copy

7.14159

Input #3

Copy

3
1 0 0
1 1 0
2 1 -1

Output #3

Copy

7.31281

Hint

Convert the problem into finding the number of the following three graphs: