10 Carpet Construction Conundrum

Time Limit: 1 Second
Memory Limit: 2 MB

A master artisan is designing a ceremonial quilt made entirely of triangular fabric patches. Each patch is a scalene triangle. The artisan sews patches edge-to-edge so that each new patch shares exactly one full edge with the previous patch. The quilt begins with Triangle 1 placed in the plane as follows:

- Side a_1 lies along the x-axis.
- Its first endpoint is at (0, 0).
- Its second endpoint is at (a_1, 0).
- The third vertex lies above the x-axis.

For each triangle i >1:

- Side a_i is sewn to the current exposed edge of the quilt.
- The triangle must lie on the LEFT side of the directed exposed edge.
- After placement, the new exposed edge becomes the edge from the previous second endpoint to the new vertex.

All side lengths are positive real numbers and satisfy the triangle inequality. After placing all N triangles, compute:

1. The total area of all triangles.
2. The maximum Euclidean distance between any two vertices in the quilt (the diameter).

10.1 Input

The first line of input will be the number of triangles N, $1 \leq N \leq 200{,}000$. The following N lines are of the format a_i b_i c_i that are the lengths of the sides of the triangles.

10.2 Output

Print two lines:

- The total area (absolute or relative error $\leq 1e^{-6}$)
- The maximum distance between any two vertices (absolute or relative error $\leq 1e^{-6}$)

10.3 Sample Input/Output

Sample Input	Sample Output
3 3 4 5 5 3 4 4 5 3	18.000000 10.440307