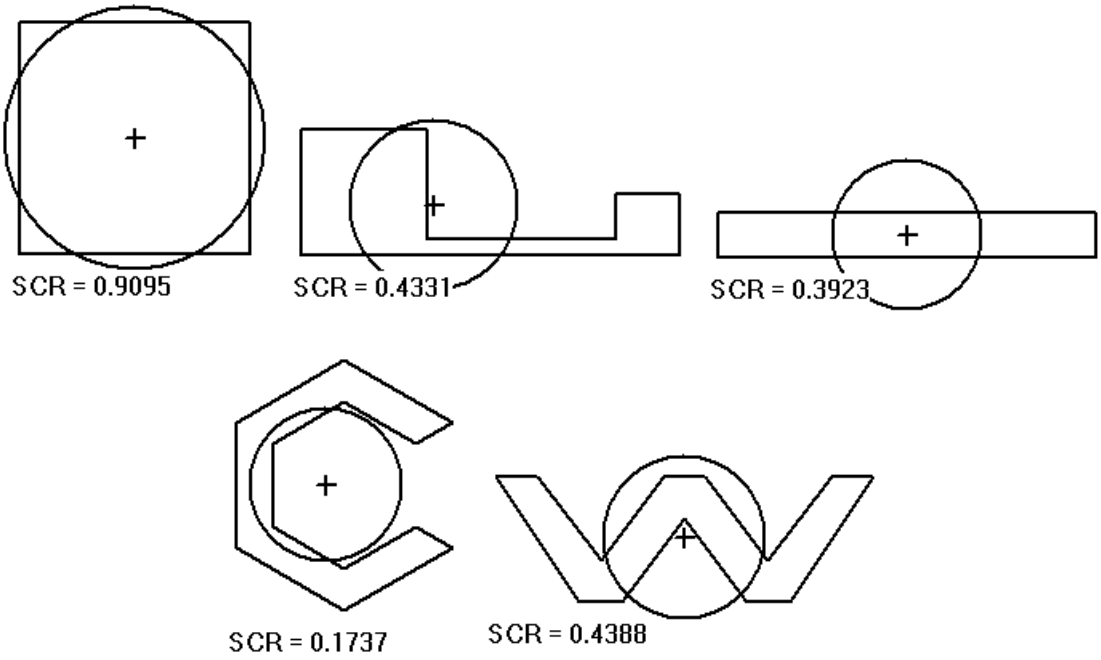
D • Gerrymandering Criterion

One of the criteria used in evaluating election districts is the compactness of the districts. Professor Fumblemore wants to investigate whether the *roundness* of election districts can be used to test for compactness. The *simplified centered roundness* **SCR(R)** of a plane region **R** is defined by:

- (x, y) is the centroid of **R**
- **D** is a disc centered at (x, y) with the same area as **R**
- SCR(R) = (Area of (R ∩ D)) / Area(R)

The simplified centered roundness will always be between 0 and 1. In practice, the region will be approximated by a polygon. Some examples: the cross (+) is the centroid of **R**:



Write a program which takes as input the vertices of a polygon in counter-clockwise order (interior of the polygon is to the left of the boundary as you follow it) and finds the *simplified centered roundness* of the polygon.

Input and Output specification are on the back of this page.

Input

Input data consists of multiple lines of input. The first line contains the number ***N,*** (3 <= ***N*** <= 100) of vertices to follow. The first line is followed by (***N***+3)/4 additional lines consisting of 8 space separated floating point numbers representing the x and y coordinates of the vertices in order (x coordinate first). Each line, except perhaps the last, will contain the coordinates of 4 vertices.

Output

Output consists of a single line containing the *simplified centered roundness* of the polygon to 4 decimal places.

Sample 1:

Sample Input	Sample Output
4 0 0 4 0 4 4 0 4	0.9095

Sample 2:

Sample Input	Sample Output
8 0 0 12 0 12 2 10 2 10 0.5 4 0.5 4 4 0 4	0.4331