Geometry

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

There are n triangles. You need to construct some closed graphs that contain these n triangles.

Find the minimum sum of perimeters of these graphs. Note that the graphs can intersect.

Input

First line contains an integer, $n(1 \leq n \leq 14)$.

The following n lines contain 6 integers $0 \leq x_1, y_1, x_2, y_2, x_3, y_3 \leq 200$, representing 3 vertices of the triangle.

Output

One line with a real number, the minimum sum of perimeters.

Let's assume that your answer be a, and the answer of the jury is b.

You answer is considered correct when $\frac{|a-b|}{max(1,b)} \leq 10^{-4}$ holds.

Examples

standard input	standard output
2 0 0 1 0 0 1 100 100 101 100 100 101	6.828427
2 0 0 0 1 1 0 1 0 0 1 1 1	4.000000