

# Bob's gym routine - Easy

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

The only difference between the easy and hard version of the problem is the size of the constraints.

Bob has decided to maintain a healthy lifestyle and has started going to the gym. His gym instructor is very strict and makes him do a rigorous workout. There are  $N$  poles spread across the gym, where the  $i^{th}$  pole is located at coordinate  $(x_i, y_i)$ . The gym instructor has asked Bob to run around three such poles. Bob is exhausted and wanted to choose a set of three poles with the minimum perimeter.

Could you help Bob find the minimum perimeter?

## Input

The first line contains an integer  $N$  ( $3 \leq N \leq 100$ ) — the number of poles.

This is followed by  $N$  lines, each containing two integer  $x_i$  and  $y_i$  ( $-10^9 \leq x_i, y_i \leq 10^9$ ) — the coordinates of the  $i^{th}$  pole.

You may assume that each point is distinct.

## Output

Print a single real number  $d$  where  $d$  is the minimum perimeter.

Answers within an absolute error of  $10^{-6}$  will be accepted

Note: Degenerate triangles — triangles with zero area — are ok.

## Examples

standard input	standard output
4 0 0 0 3 3 0 1 1	6.650281539873
3 0 0 0 1 0 2 1 5	4.000000000000