



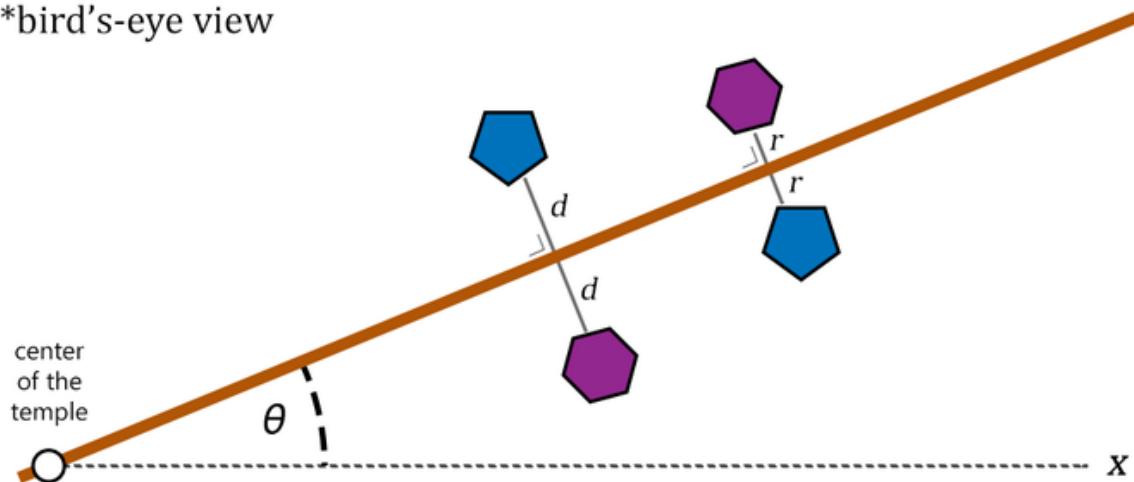
Fowl Sculptures

Time Limit	1 s
Memory Limit	32 MB

Problem Description

Mr. Ganesh manages the conservation of the biggest temple in the world: the TOKI Temple. From old records, Mr. Ganesh concludes that the temple has two interesting objects: the central point (center of the temple) and the main path. The main path of TOKI Temple is a straight line that passes the central point. For convenience, we represent the temple setting in the Cartesian coordinate system. The central point is located at the origin $(0, 0)$, and the main path is a line forming the angle θ with the positive X axis (counterclockwise).

*bird's-eye view



There are two kinds of sculptures in TOKI Temple: chicken sculptures and goose sculptures. The position of each chicken sculpture is always symmetric to another goose sculpture with respect to the main path of the TOKI Temple. Unfortunately, because of the accumulation of dust the main path of the TOKI Temple is no longer visible. This means nobody knows the exact value of θ .

The number of sculptures inside the temple is still unknown. During the conservation, Mr. Ganesh has found N sculptures. None of them is located at $(0, 0)$. Each sculpture is found in a poor condition such that it is indistinguishable whether it is a chicken or a goose sculpture. In order to identify the type of each sculpture, Mr. Ganesh just made a public contest to find other missing sculptures (if any).

Mr. Denglek, who soon heard about the contest, is eager to win it. He realized that there must be at least K missing sculptures besides the N sculptures that have been found, thanks to the symmetry property.

What is the minimum possible value of K , and what is a possible value of θ for this K ?



Input Format

The first line of contains an integer N . Each of the next N lines contains 2 integers x_i and y_i , the coordinates of the i^{th} sculpture.

Output Format

The first line should contain a floating-point number θ ($0 \leq \theta < 180$) that denotes the slope of the main path in degrees, rounded to 3 decimal places.

The second line should contain an integer K denoting the minimum number of missing sculptures if the angle is θ .

If there are several values of θ that yield the same value of K , choose the largest value of θ .

Sample Input 1

```
3
1 1
-1 2
-1 -2
```

Sample Output 1

```
0.000
1
```

Sample Input 2

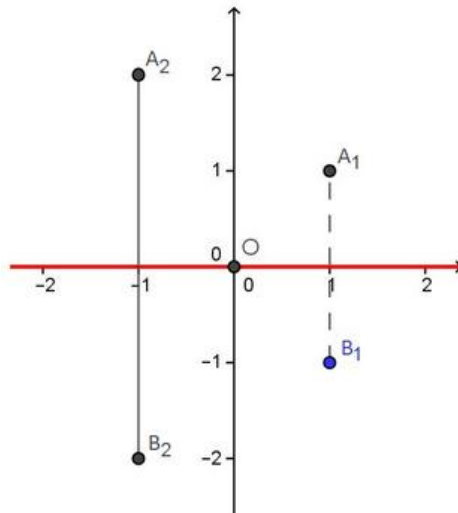
```
4
-1 1
1 0
0 1
1 -1
```

Sample Output 2

```
45.000
0
```

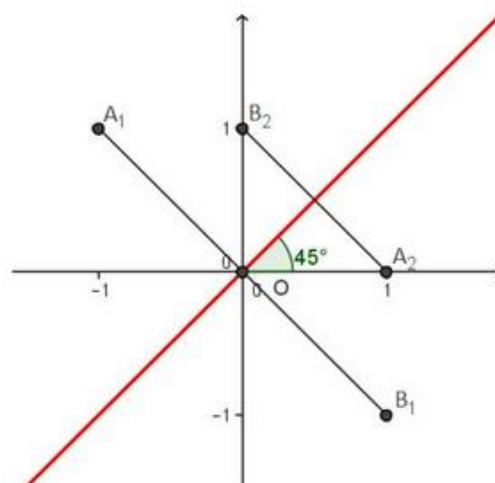
Explanation

This is the illustration of sample input 1:



Here, A_i denotes the i^{th} chicken sculpture, and B_j denotes the j^{th} goose sculpture. The blue dots represent the postulated locations of the undiscovered sculptures, while the black dots represent the location of the sculptures that have already been found. The red line represents the main path of TOKI Temple.

This is the illustration of sample input 2:



Subtasks

For each subtask,

- $-1,000,000,000 \leq x_i, y_i \leq 1,000,000,000$
- No sculptures (both missing and already found) are located on $(0,0)$.
- No two or more sculptures are located on the same coordinate.

Subtask 1 (17 points):

- $1 \leq N \leq 200$
- It is known that $\theta = 0$.

Subtask 2 (23 points):

- $1 \leq N \leq 200$



- It is known that $0 \leq \theta < 180$.

Subtask 3 (60 points):

- $1 \leq N \leq 2,000$
- It is known that $0 \leq \theta < 180$.