

Polygon

There are N points in a plane whose coordinates are natural numbers. A convex polygon with maximal number of vertices is a convex polygon whose vertices are some of given points and the origin having maximal possible number of vertices. Origin, i.e. point with coordinates $(0, 0)$, must be one of vertices of a convex polygon with maximal number of vertices.

Write a program that will determine number of vertices in such polygon.

A polygon is convex if every line segment whose endpoints are inside that polygon is also completely inside it. Consecutive edges of a polygon must not be parallel.

Input

The first line of input file contains a natural number N , $2 \leq N \leq 100$, a number of given points.

Each of the following N lines contains two natural numbers X and Y , $1 \leq X \leq 100$, $1 \leq Y \leq 100$, separated by a space character, coordinates of one point.

All points will be different.

Output

The first and only line of output file should contain number of vertices of convex polygon with maximal number of vertices. Note: the result will always be at least 3.

Sample

Input

```
5
4 2
2 2
2 3
3 2
3 1
```

Output

```
4
```

Input

```
8
10 8
3 9
2 8
2 3
9 2
9 10
10 3
8 10
```

Output

```
8
```

Input

10
96
17
22
39
87
32
94
31
97
69

Output

7

Explanation for test data #2: coordinates of polygon are (2, 8), (3, 9), (8, 10), (9, 10), (10, 8), (10, 3), (9, 2), (0, 0)