

Cocircular Points

You probably know what a set of collinear points is: a set of points such that there exists a straight line that passes through all of them. A set of cocircular points is defined in the same fashion, but instead of a straight line, we ask that there is a circle such that every point of the set lies over its perimeter.

The International Collinear Points Centre (ICPC) has assigned you the following task: given a set of points, calculate the size of the larger subset of cocircular points.

Input

Each test case is given using several lines. The first line contains an integer N representing the number of points in the set ($1 \leq N \leq 100$). Each of the next N lines contains two integers X and Y representing the coordinates of a point of the set ($-10^4 \leq X, Y \leq 10^4$). Within each test case, no two points have the same location.

The last test case is followed by a line containing one zero.

Output

For each test case output a single line with a single integer representing the number of points in one of the largest subsets of the input that are cocircular.

Sample

Input

```
7
-10 0
0 -10
10 0
0 10
-20 10
-10 20
-2 4
4
-10000 10000
10000 10000
10000 -10000
-10000 -9999
3
-1 0
0 0
1 0
0
```

Output

```
5
3
2
```