A regular convex polygon is a polygon where each side has the same length, and all interior angles are equal and less than 180 degrees. A square, for example, is a regular convex polygon. You are given three points which are vertices of a regular convex polygon R; can you determine the minimum number of vertices that R must have?

Input

Each test case consists of three lines. Line i consists of two floating point values x_i and y_i ($-10^4 \leq x_1, y_1 \leq 10^4$) where (x_i, y_i) are the coordinates of a vertex of R. The coordinates are given with a precision of 10^{-6}, i.e., they differ from the exact coordinates by at most 10^{-6}. You may assume that for each test case the Euclidean distance between any two given points is at least 1, and R has at most 1000 vertices. The input will finish with a line containing the word '`END`'.

Output

For each test case, print one line with the minimum number of vertices that R must have.

Sample Input

```
-1385.736326 -146.954822
430.000292 -2041.361203
1162.736034 478.316025
0.000000 4147.000000
-4147.000000 0.000000
0.000000 -4147.000000
END
```

Sample Output

```
3
4
```