

# ASTU ICPC Club

## Prob:Lattices

A lattice is an important mathematical concept that has applications in number theory, group theory, coding theory, cryptography, material science, solid-state physics, computational physics, etc. We are going to deal with two-dimensional lattices.

A lattice point is an ordered pair  $(x, y)$  where  $x$  and  $y$  are both integers. Given the coordinates of the vertices of a triangle (which happen to be lattice points), you are to count the number of lattice points which lie completely inside of the triangle (points on the edges or vertices of the triangle do not count).

### Input

The input will contain multiple test cases (maximum of 200 test cases). Each input test case consists of six integers  $x_1, y_1, x_2, y_2, x_3, y_3$  where  $(x_1, y_1), (x_2, y_2), (x_3, y_3)$  are the coordinates of vertices of the triangle. All triangles in the input will be non-degenerate (will have positive area), and be in the range -  $15000 \leq x_1, y_1, x_2, y_2, x_3, y_3 \leq 15000$ . The end of input is marked by a test case with  $x_1 = y_1 = x_2 = y_2 = x_3 = y_3 = 0$  and should not be processed.

### Output

For each test case, the program should print the number of internal lattice points on a single line.

### Sample input

```
0 0 1 0 0 1
0 0 5 0 0 5
0 0 0 0 0 0
```

### Sample output

```
0
6
```