PROBLEM #1:

Converging 4-Touples.

Description:

Suppose you are given four positive integers: **a, b, c, d**. It is possible to use them to form four more, like this:

|a-b| |b-c| |c-d| |d-a|

where | | is the absolute value. If you repeat this process enough times, you will eventually end up with four integers that are all the same.
For example, if you start with **1,3,5,9**:

1 3 5 9
2 2 4 8
0 2 4 6
2 2 2 6
0 0 4 4
0 4 0 4
4 4 4 4

the sequence converges in 6 steps.
Given **a**, **b**, **c** and **d**, figure out just how quickly the sequence converges.

Input:

There will be several test cases in the input. Each test case consists of four positive integers on a single line (**1 ≤ a,b,c,d ≤ 2,000,000,000**), with single spaces for separation. The input will end with a line with four **0**s.

Output:

For each test case, output a single integer on its own line, indicating the number of steps until convergence. Output no extra spaces, and do not separate answers with blank lines.he first line of output should be. .

Sample:

Input	Output
1 3 5 9 4 3 2 1 1 1 1 1 0 0 0 0	6 4 0