

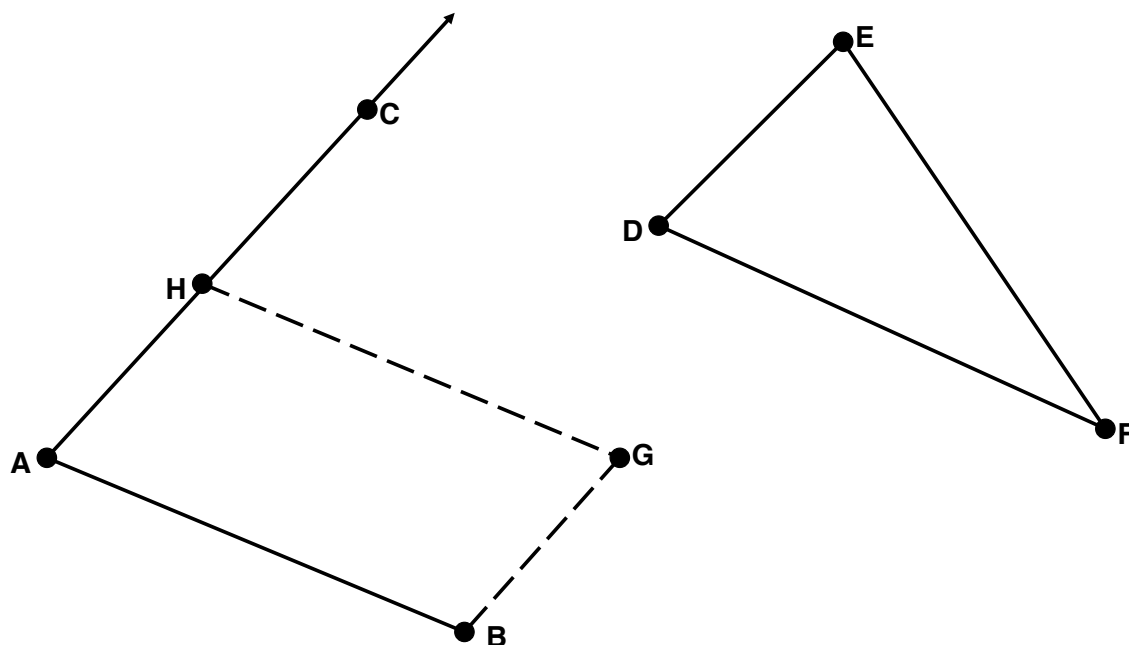


B: Euclid

In one of his notebooks, Euclid gave a complex procedure for solving the following problem. With computers, perhaps there is an easier way.

In a 2D plane, consider a line segment \mathbf{AB} , another point \mathbf{C} which is not collinear with \mathbf{AB} , and a triangle \mathbf{DEF} . The goal is to find points \mathbf{G} and \mathbf{H} such that:

- \mathbf{H} is on the ray \mathbf{AC} (it may be closer to \mathbf{A} than \mathbf{C} or further away, but angle \mathbf{CAB} is the same as angle \mathbf{HAB})
- \mathbf{ABGH} is a parallelogram (\mathbf{AB} is parallel to \mathbf{HG} , \mathbf{AH} is parallel to \mathbf{BG})
- The area of parallelogram \mathbf{ABGH} is the same as the area of triangle \mathbf{DEF}



The Input

There will be several test cases. Each test case will consist of twelve real numbers, with no more than 3 decimal places each, on a single line. Those numbers will represent, in order:

$\mathbf{AX AY BX BY CX CY DX DY EX EY FX FY}$

where point \mathbf{A} is $(\mathbf{AX}, \mathbf{AY})$, point \mathbf{B} is $(\mathbf{BX}, \mathbf{BY})$, and so on. Points \mathbf{A} , \mathbf{B} and \mathbf{C} are guaranteed to NOT be collinear. Likewise, \mathbf{D} , \mathbf{E} and \mathbf{F} are also guaranteed to be non-collinear. Every number is guaranteed to be in the range from -1000.0 to 1000.0 inclusive. End of the input will be signified by a line with twelve 0.0 's.



The Output

For each test case, print a single line with four decimal numbers. These represent points G and H , like this:

$G_X G_Y H_X H_Y$

where point G is (G_X, G_Y) and point H is (H_X, H_Y) . Print all values rounded to 3 decimal places of precision (NOT truncated). Print a single space between numbers. Do not print any blank lines between answers.

Sample Input

```
0 0 5 0 0 5 3 2 7 2 0 4
1.3 2.6 12.1 4.5 8.1 13.7 2.2 0.1 9.8 6.6 1.9 6.7
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
```

Sample Output

```
5.000 0.800 0.000 0.800
13.756 7.204 2.956 5.304
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