I • EXOCENTER OF A TRIANGLE

Problem

Given a triangle **ABC**, the *Extriangles* of **ABC** are constructed as follows:

On each side of **ABC**, construct a square (**ABDE**, **BCHJ** and **ACFG** in the figure below).
Connect adjacent square corners to form the three *Extriangles* (**AGD**, **BEJ** and **CFH** in the figure).

The *Exomedians* of **ABC** are the medians of the *Extriangles*, which pass through vertices of the original triangle, extended into the original triangle (**LAO**, **MBO** and **NCO** in the figure. As the figure indicates, the three *Exomedians* intersect at a common point called the *Exocenter* (point **O** in the figure).

This problem is to write a program to compute the *Exocenters* of triangles.
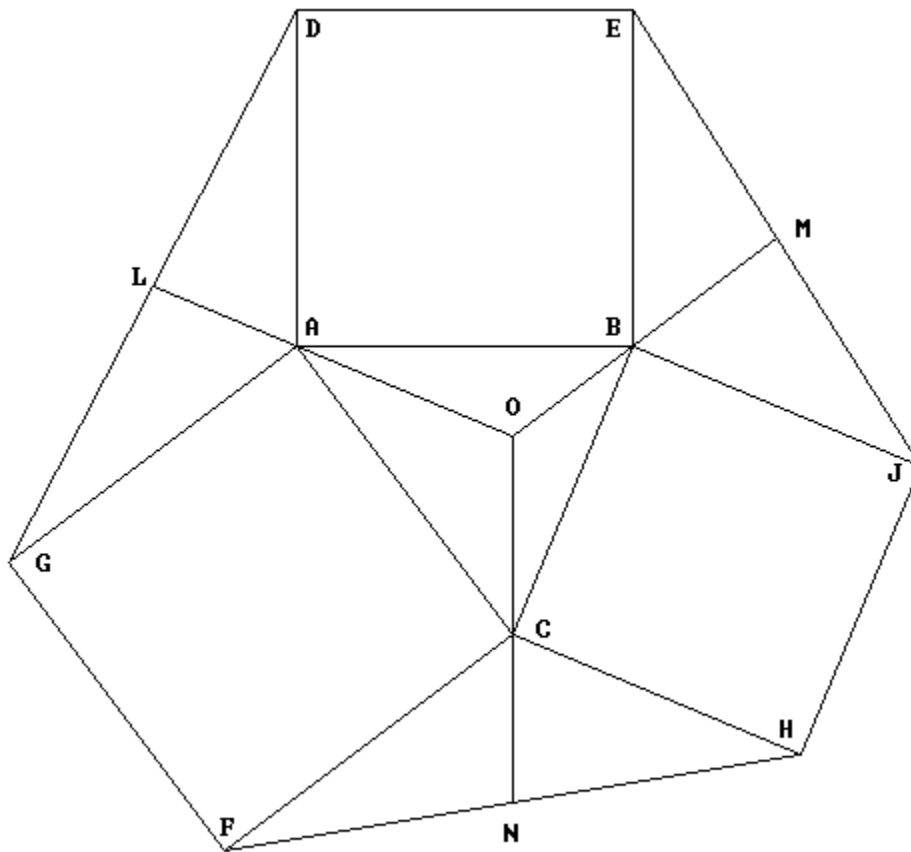
Input

The first line of the input consists of a positive integer n, which is the number of datasets that follow. Each dataset consists of 3 lines; each line contains two floating point values which represent the (two-dimensional) coordinate of one vertex of a triangle. So, there are total of $(n*3) + 1$ lines of input. Note: All input triangles will be strongly non-degenerate in that no vertex will be within one unit of the line through the other two vertices.

Output

For each dataset you must print out the coordinates of the *Exocenter* of the input triangle correct to four decimal places.

Example

Input	Output
2 0.0 0.0 9.0 12.0 14.0 0.0 3.0 4.0 13.0 19.0 2.0 -10.0	9.0000 3.7500 -48.0040 23.3600