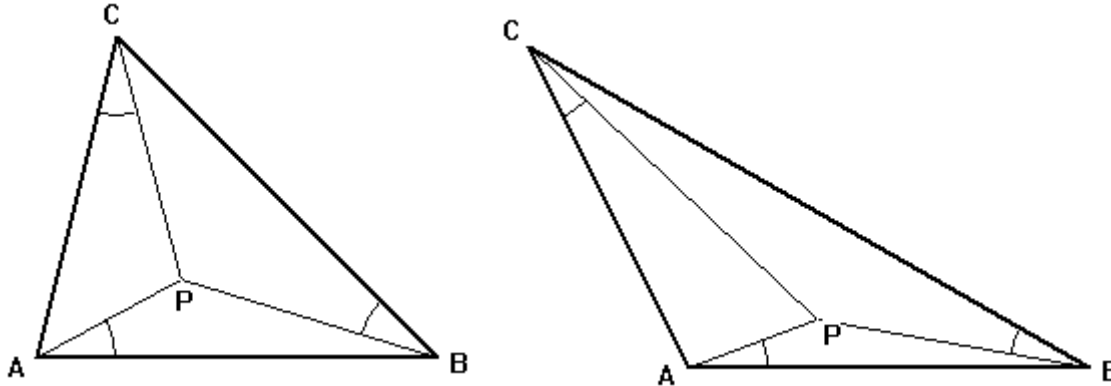




H • Brocard Point of a Triangle

The *Brocard point* of a triangle ABC is a point P in the triangle chosen so that:
 $\angle PAB = \angle PBC = \angle PCA$ (see figure below).



The common angle is called the *Brocard angle*. The largest *Brocard angle* is $\pi/6$ which is the *Brocard angle* for an equilateral triangle (the *Brocard point* is the centroid of the triangle).

Write a program to compute the coordinates of the *Brocard point* of a triangle given the coordinates of the vertices.

Input

The first line of input contains a single integer P , ($1 \leq P \leq 10000$), which is the number of data sets that follow. Each data set should be processed identically and independently.

Each data set consists of a single line of input. It contains the data set number, K , followed by the six space separated coordinate values $A_x, A_y, B_x, B_y, C_x, C_y$ of the vertices of the triangle. The vertices will always be specified so going from A to B to C and back to A circles the triangle counter-clockwise. Input coordinates are floating point values.

Output

For each data set there is a single line of output. The single output line consists of the data set number, K , followed by a single space followed by the x coordinate of the *Brocard point*, followed by a single space followed by the y coordinate of the *Brocard point*. Coordinates should be rounded to five decimal places.



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Sample Input	Sample Output
3	1 1.40456 0.82890
1 0 -1.3 3.4 0.5 1.1 2.3	2 1.56047 0.74902
2 0 0 3 0 0 4	3 3.87699 0.40167
3 3.1 0.2 4.3 0.4 0 0.8	