

Practice Question: Tetrahedron Volume

Filename: tetra

Time limit: 1 second

The Problem

Given four points not all on the same plane, calculate the volume of the tetrahedron defined by those points.

The Input

The first line of the input will contain a single positive integer, c ($c \leq 100$), representing the number of tetrahedrons to evaluate. The test cases follow. Each test case is on four lines. Each of the four lines have three space separated integers, x , y , and z , representing the coordinates of one of the points of the tetrahedron. You are guaranteed that no three of the points will be collinear and that all four points will not be on the same plane.

The Output

For each tetrahedron, output its area rounded to 3 decimal places.

Sample Input

```
1
3 4 0
3 7 0
7 4 0
121 309 12
```

Sample Output

```
24.000
```