Problem M. 3D Geometry

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	512 mebibytes

An axis-aligned tetrahedron (also known as triangular pyramid) $DABC$ is a convex polyhedron in three dimension with vertices

- $D : (x_1, y_1, z_1)$,
- $A : (x_2, y_1, z_1)$,
- $B : (x_1, y_2, z_1)$,
- $C : (x_1, y_1, z_2)$.

Also, an axis-aligned cube $PQRSDEFG$ is a convex polyhedron with vertices

- $P : (x_3, y_3, z_3)$,
- $Q : (x_3, y_3, z_4)$,
- $R : (x_3, y_4, z_3)$,
- $S : (x_3, y_4, z_4)$,
- $D : (x_4, y_3, z_3)$,
- $E : (x_4, y_3, z_4)$,
- $F : (x_4, y_4, z_3)$,
- $G : (x_4, y_4, z_4)$.

Given an axis-aligned tetrahedron $DABC$ and an axis-aligned cube $PQRSDEFG$, find the volume of their intersection.

Input

The input consists of several test cases terminated by end-of-file. For each test case,

There are 4 lines, and the i-th line contains three integers x_i, y_i, and z_i.

- $-500 \le x_i, y_i, z_i \le 500$ for each $1 \le i \le 4$
- $x_1 \ne x_2$, $y_1 \ne y_2$, $z_1 \ne z_2$
- $x_3 \ne x_4$, $y_3 \ne y_4$, $z_3 \ne z_4$
- In each input, the number of test cases does not exceed 10^5.

Output

For each test case, output a float which denotes the volume.

Your answer is considered correct if its absolute or relative error doesn't exceed 10^{-6}.

Examples

standard input	standard output
0 0 0 1 1 1 0 0 0 1 1 1 0 0 0 2 2 2 0 0 0 1 1 1 0 2 0 2 0 2 1 0 1 0 1 0	0.166666667 0.833333333 0.166666667