Cone

Find the radius and height of a cone such that all the given points are inside the cone and the volume of the cone is minimal.

Input

There are multiple test cases. For each test case, the first line of the input contains the number of the points inside the code, \mathbf{N} ($1 \le \mathbf{N} \le 10,000$). The following \mathbf{N} lines describe points with three floating point numbers \mathbf{x} , \mathbf{y} , and \mathbf{z} . ($1 \le |\mathbf{x}|$, $|\mathbf{y}| \le 1,000$, $1 \le \mathbf{z} \le 1,000$). There is at least one point with non-zero \mathbf{x} or \mathbf{y} .

There is a blank line after a test case.

Output

For each test case, output the height and the base radius of the cone. The numbers must be precise up to 3 digits after decimal point.

Sample Input

```
2
1.00 0.00 1.00
0.00 1.50 1.50
1
1.00 0.00 1.00
```

Sample Output

2.000 2.000 3.000 1.500