

Name: Lokesh K

Q1) You are transporting some boxes through a tunnel, where each box is a parallelepiped, and is characterized by its length, width and height. The height of the tunnel is 41 feet and the width can be assumed to be infinite. A box can be carried through the tunnel only if its height is strictly less than the tunnel's height. Find the volume of each box that can be successfully transported to the other end of the tunnel. Note: Boxes cannot be rotated.

Code:

```

1 #include<stdio.h>
2 int main()
3 {
4     int n;
5     scanf("%d",&n);
6     for(int i=0;i<n;i++)
7     {
8         int length,width,height;
9         scanf("%d %d %d",&length,&width,&height);
10
11
12         if(height<41){
13             int volume=length*width*height;
14             printf("%d\n",volume);
15         }
16     }
17 }

```

OUTPUT:

	Input	Expected	Got	
✓	4	125	125	✓
	5 5 5	80	80	
	1 2 40			
	10 5 41			
	7 2 42			

Passed all tests! ✓

Q2) You are given n triangles, specifically, their sides a_i , b_i and c_i . Print them in the same style but sorted by their areas from the smallest one to the largest one. It is guaranteed that all the areas are different.

The best way to calculate a volume of the triangle with sides a, b and c is Heron's formula:

$S = \sqrt{p * (p - a) * (p - b) * (p - c)}$ where $p = (a + b + c) / 2$.

Input Format

First line of each test file contains a single integer n. n lines follow with a_i , b_i and c_i on each separated by single spaces.

Constraints

$1 \leq n \leq 100$

$1 \leq a_i, b_i, c_i \leq 70$

$a_i + b_i > c_i$, $a_i + c_i > b_i$ and $b_i + c_i > a_i$

Output Format

Print exactly n lines. On each line print 3 integers separated by single spaces, which are a_i , b_i and c_i of the corresponding triangle.

Sample Input 0

3

7 24 25

5 12 13

3 4 5

Sample Output 0

3 4 5

5 12 13

7 24 25

Explanation 0

The square of the first triangle is 84. The square of the second triangle is 30. The square of the third triangle is 6. So the sorted order is the reverse one.

Code:

```

1 #include <stdio.h>
2 #include <math.h>
3 #include <stdlib.h>
4 typedef struct{
5     double area;
6     int a,b,c;
7 }Triangle;
8 double calculate_area(int a,int b,int c){
9     double p = (a+b+c)/2.0;
10    return sqrt(p*(p-a)*(p-b)*(p-c));
11 }
12 int compare(const void*x,const void*y){
13     Triangle *t1 = (Triangle *)x;
14     Triangle *t2 = (Triangle *)y;
15     if(t1->area < t2->area) return -1;
16     if(t1->area > t2->area) return 1;
17     return 0;
18 }
19 int main(){
20     int n;
21     scanf("%d",&n);
22     Triangle triangles[n];
23     for(int i=0;i<n;i++){
24         int a,b,c;
25         scanf("%d %d %d",&a,&b,&c);
26         triangles[i].a = a;
27         triangles[i].b = b;
28         triangles[i].c = c;
29         triangles[i].area = calculate_area(a,b,c);
30     }
31     qsort(triangles, n, sizeof(Triangle), compare);
32
33     for(int i =0;i<n;i++){
34         printf("%d %d %d\n",triangles[i].a, triangles[i].b, triangles[i].c);
35     }
36     return 0;
37 }

```

OUTPUT:

	Input	Expected	Got	
✓	3 7 24 25 5 12 13 3 4 5	3 4 5 5 12 13 7 24 25	3 4 5 5 12 13 7 24 25	✓

Passed all tests! ✓