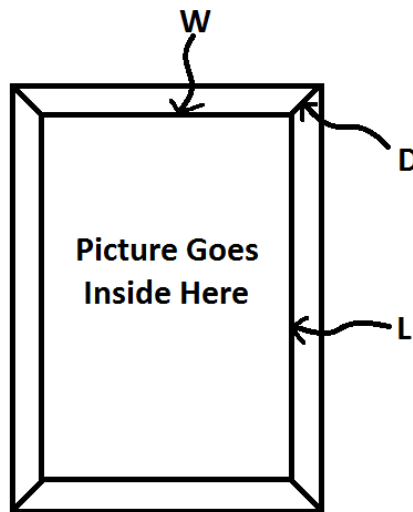


Say Cheese!

Filename: framing

The Ukrainian Caroling Federation loves taking photos. They like small pictures, large pictures, and everything in between. In fact, they've just gotten back from the annual Christmas retreat, and they have thousands of photos from everyone in the group. Being a new member of the group, people don't respect you very much. But you aim to change that this year! You've had a great idea for Christmas presents to make everyone love you. Because everybody loves their pictures so much, they of course would love to hang these pictures around their house. Naturally, everyone is going to need frames, and lots of them.

To make the gifts nicer, you decide you're going to make all of the frames yourself. You already have a large amount of wood and have decided that every frame you make will be of the same general shape, as seen in the picture. L and W are the length and width of the picture you are framing, and D is the length of the diagonal from the corner of the picture to the corner of the frame (all measurements given in inches). So that the frame fits together properly, each of these should meet at a 45° angle. For simplicity, you may assume that you will build the frame to go perfectly around the picture and that this is the only wood you will need (you will use other materials to fix the picture inside the frame). Furthermore, each frame you build will be 1 inch deep.



Now you want to know: how much wood will you need to make all the frames?

The Problem:

Given L , W , and D , determine how much wood is needed to make the frames for everyone in your group. Because you may do this sort of thing again in the future, your program should be able to calculate this for multiple groups.

The Input:

There will be multiple groups in the input file. The first input line contains a positive integer, t , indicating the number of groups to be processed. This will be followed by t groups. Each group will begin with an integer, n ($1 \leq n \leq 100$), indicating the number of people in the group. This is followed by n group members. Each group member starts with an integer, f ($1 \leq f \leq 100$) on a line by itself, indicating the number of frames to make for that group member. Following this will be f lines, each containing 3 integers l , w , and d ($1 \leq l, w, d \leq 100$). Each integer will be separated by a single space, and no line will contain leading or trailing spaces.

The Output:

At the beginning of each group, output "Group #x: v cubic inches" where x is the group number (starting from 1), and v is the total volume of the wood needed to build all of the frames for everyone in the group rounded to 2 decimal places (2.485 should be rounded to 2.49, 2.484 should be rounded to 2.48). Leave a blank line after the output for each test case.

Sample Input:

```
2
1
1
4 6 1
2
2
4 6 2
5 7 2
1
8 10 1
```

Sample Output:

```
Group #1: 16.14 cubic inches
Group #2: 105.68 cubic inches
```