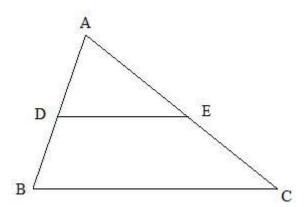
## 1043 - Triangle Partitioning

See the picture below.



You are given **AB**, **AC** and **BC**. **DE** is parallel to **BC**. You are also given the area ratio between **ADE** and **BDEC**. You have to find the value of **AD**.

## **Input**

Input starts with an integer  $T \leq 25$ , denoting the number of test cases.

Each case begins with four real numbers denoting **AB**, **AC**, **BC** and the ratio of **ADE** and **BDEC** (**ADE** / **BDEC**). You can safely assume that the given triangle is a valid triangle with positive area.

## **Output**

For each case of input you have to print the case number and AD. Errors less than 10<sup>-6</sup> will be ignored.

| Sample Input           | Output for Sample Input |
|------------------------|-------------------------|
| 4                      | Case 1: 81.6496580      |
| 100 100 100 2          | Case 2: 7.07106781      |
| 10 12 14 1             | Case 3: 6.6742381247    |
| 7 8 9 10               | Case 4: 7.437454786     |
| 8.134 9.098 7.123 5.10 |                         |