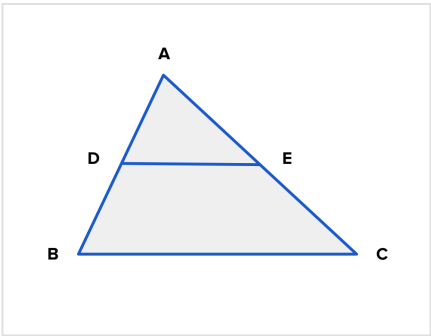# Triangle Partitioning

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 (≤ 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^{-6} will be ignored.

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