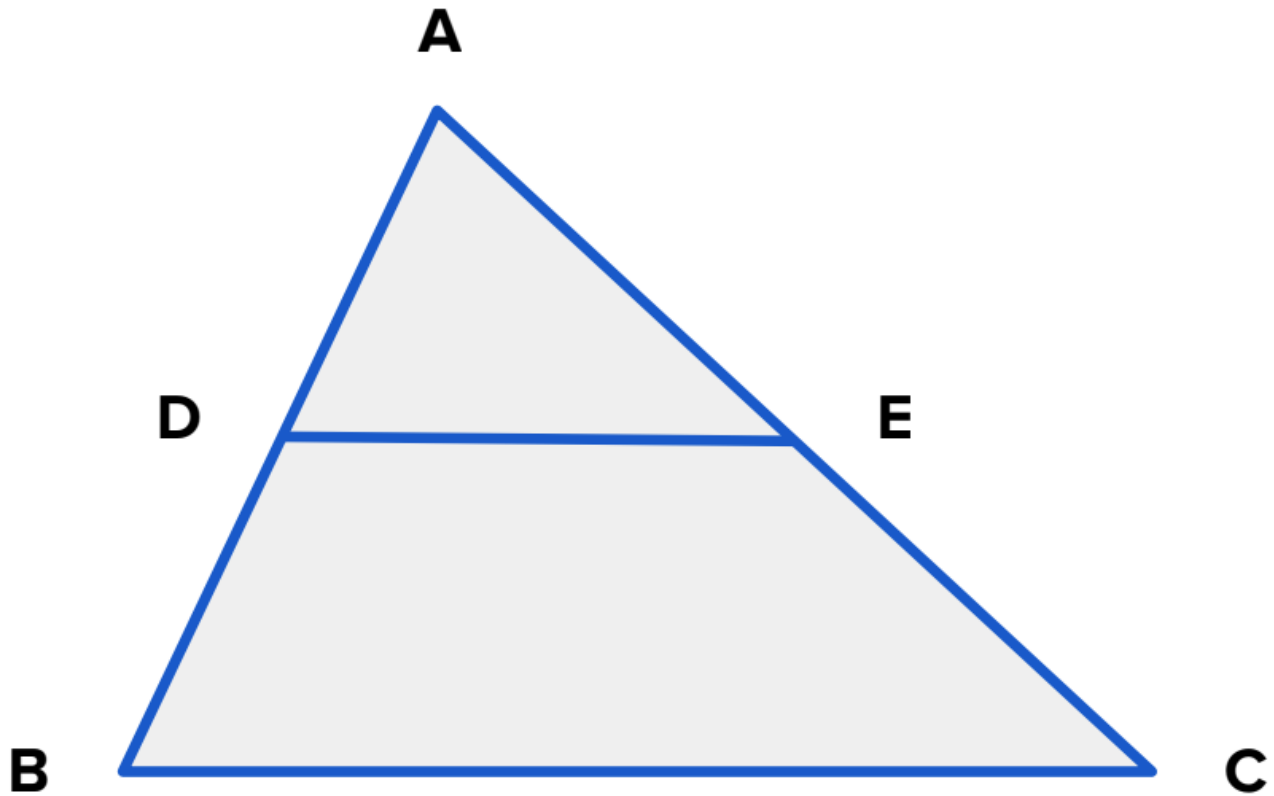


## Problem J. Triangle Partitioning

**Time limit** 1000 ms  
**Mem limit** 65536 kB

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  $10^{-6}$  will be ignored.

### Sample

Input	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