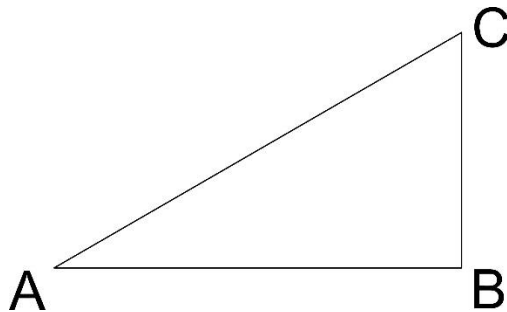


Are you Smarter than a 4th Grader?

Dr. van Delden's daughter is in 4th grade and is learning all about geometry. When Dr. van Delden comes home at night, he is very tired for giving a 110% all day long at The College. As you can imagine he works extremely hard and is very underpaid... ☹.... But back on point... Dr. van Delden needs a program which can answer his daughter's geometry questions so that he can get some much needed cartoon-watching time at home. Please help him! The program needs to focus specifically on right triangles where each vertex is labelled as follows:



INPUT: Each line of input will contain two side labels (either AB, BC or AC) along with their distances in integer format in the range [1,10000]. The labels and distances will be separated by exactly one space. The final input line will have a -1 which marks the end of the input.

OUTPUT: The label and distance of the missing side as well as the area of the triangle in the **exact format** shown below. The output values must all be in integer format. Decimal point numbers, that are computed, should be truncated simply by dropping the decimal point... I.e. 3.1 or 3.5 or 3.9 should all be reported as 3.

Example Input:

```
AB 3 BC 4
BC 4 AC 5
AC 891 AB 125
BC 1923 AC 9999
-1
```

Example Output:

```
AC: 5, AREA: 6
AB: 3, AREA: 6
BC: 882, AREA: 55125
AB: 9812, AREA: 9434238
```