TV Store

TV screens are typically measured diagonally. It makes them appear bigger. You are working at the TV store and the customers want to know the height and width and diagonal measurements. Some TV's are labeled with just the height measurement, some with just the width measurement and some with just the diagonal measurement. You will need to calculate the remaining measurements.

Modern TV's come with two aspect ratios 4x3 and the newer 16x9. You have both TV types in your store.

The input file is a text file. Each line in the file is another TV that needs its measurements calculated. The first item in each line is the aspect ratio (4x3 or 16x9). The second number is the length of the TV, the third number is the height of the TV, and the fourth number is the diagonal measurement of the TV. If the number is a 0, it is unknown and needs to be calculated. All measurements are rounded to the nearest whole number. This file contains no more than 100 TV's to calculate. The length, height and diagonal measurements will always be less than 150.

The output file is also a text file. Each line in the file is another TV that has its measurements calculated. The first item in each line is the aspect ratio (4x3 or 16x9). The second number is the length of the TV, the third number is the height of the TV, the fourth number is the diagonal measurement of the TV. There should be one line of text for each TV processed.

Formulas you will need:
$diag^2 = height^2 + length^2$
4x3 ratio : length= 4/3 * height
16x9 ratio: length= 16/9 * height

Example:
**input.txt:**
4x3 0 0 47$
4x3 0 47 0$
4x3 47 0 0$
16x9 0 0 47$
16x9 0 47 0$
16x9 47 0 0

**output.txt:**
4x3 38 28 47$
4x3 63 47 78$
4x3 47 35 59$
16x9 41 23 47$
16x9 84 47 96$
16x9 47 26 54$