Problem 2: Gearing Up

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Problem Background

Gears are used in many machines because of their ability to grant us a mechanical advantage. A mechanical advantage occurs when the effort someone puts into a task is artificially multiplied. For example, the gears on your bicycle allow you to move much faster than you would be able to simply by running, even if you're expending the same amount of effort. When working with gears, the "gear ratio" is a rough measure of how large an advantage you are gaining through the use of gears.

Your team is helping to design a gear chain for use in a new manufacturing system. A gear chain uses multiple gears connected in sequence to power multiple (or distant) drive shafts, without the need to rely on belts or chains that could snap or slip.

Problem Description

Your task is to ensure that the gear chain results in the correct gear ratio. The gear ratio between two gears can be calculated by counting the number of teeth on each gear, then dividing those numbers as shown:

$$R = \frac{N_B}{N_A}$$

In this formula, N_A is the number of teeth on the input gear (the gear receiving power, either directly from a motor or from another gear earlier in the chain). N_B is the number of teeth on the output gear (the gear the input gear is responsible for turning). The result R is the gear ratio; a value less than one indicates that the output gear will spin faster than the input gear.

For example, consider a system where an input gear with 24 teeth is driving an output gear with 12 teeth. The gear ratio would be calculated as 12 / 24 = 0.5, which would typically be written as 0.5:1. Here, the output gear would spin twice as fast as the input gear, magnifying the effort used to turn the input gear.

When multiple gears are connected in a chain, the overall gear ratio can be calculated by determining the gear ratio between each pair of adjacent gears, and multiplying that by the previously calculated overall ratio.

For example, consider the gears from earlier. If the 12-tooth gear was also connected to an 18-tooth gear, we can calculate their ratio as 18 / 12 = 1.5. This can then be multiplied by the 0.5 ratio we'd previously calculated to find an overall ratio of 0.75:1. If the 18-tooth gear were connected to a fourth gear, the ratio between it and the 18-tooth would be calculated, then multiplied by 0.75, to determine the overall ratio at that point.

Sample Input

The first line of your program's input, **received from the standard input channel**, will contain a positive integer representing the number of test cases. Each test case will include a series of integers, greater than or equal to 4, separated by spaces, each representing the number of teeth on a gear. The first integer in each line represents the input gear; the last integer in each line represents the final output gear.

```
3
24 12 18
10 20 30 40
8 8 8 8 8 8
```

Sample Output

For each test case, your program must output the overall gear ratio of the entire chain, formatted as X:1, where X is the gear ratio, rounded to two decimal places.

```
0.75:1
4.00:1
1.00:1
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