

Unit Conversion

Input File: conversion.txt

In science class, you must convert quantities using known ratios. Your job is to use the given ratios to convert a value of a certain unit to a different unit. It may be necessary to flip the given mole ratios.

Input:

The first line contains an integer N. There are N following cases. Each case will first consist of a number M; that number will indicate the number of lines of ratios. Each inputted ratio will be in the format of X unitA equals Y unitB. This means the ratio between unitA and unitB is X / Y. The final line in every case will be the given value and the units which it needs to be converted into, in the form of X unitA to unitB.

Output:

Output the value in the new units. Your answers should be rounded to the nearest integer and in integer form.

Example Input:

```
2
2
1 dime equals 10 cent
100 cent equals 1 dollar
20 dime to dollar
3
300 florp equals 1 zink
1 dinc equals 20 zink
1 dinc equals 5000 rand
1000 rand to zink
```

Example Output:

```
2
4
```