ULTIMATE PROBLEM

Janice is very fond of linguistic and problem solving games. Recently, she had just found a random collection of books which stored in her storeroom for a very long period. There was a book which it is written with a type of language where she had never seen in anywhere before. Out of curiosity, she tried to observe the pattern and find a general equation of the numerical system for it. However, her attempts are unsuccessful.

The following texts are written on the "numerical system" pages.

> These are squares of numbers from 1 to 12 in a dialect of a language where only around 2000 people in the world speaks it, which does not use the decimal base 10 system. You are requested to solve the problems referring to the following table given, where the equations are arranged in arbitrary order.

Equation	Answer
tuni $\times$ tuni	wo
furu $\times$ furu	tuni mbe furu
ugu $\times$ ugu	tanran
tanran $\times$ tanran	gume shide ni tanran
kwade $\times$ kwade	gume gwom ni da
tager $\times$ tager	gume biyar ni furu
bo'o $\times$ bo'o	gume furu ni da
gwom $\times$ gwom	x
y	gume ugu
z	gume bi ni da

x, y and z are requested to be solve on the book. **HOWEVER**, Janice asked you a favor to write out a program that can translate the **words into numbers**. Besides, x, y and z **must** also be applicable as an input. For example, when input y, it will get the numerical value that is equivalent to gume ugu.

 NOTE: THE CODE LOGIC MUST MEET THE RULES OF THE LANGUAGE ITSELF!

Inputs

The inputs consists of $N + 1$ lines.

The first line is the integer N, which denotes the following number of lines of input.

Every line contains **a single phrase ONLY**.

Output

The output consists of N lines which correspond to the number of phrases.

Constraints

The output value should be **positive integer**.

Examples

None, as you are required to find the value of each words yourself, then you can write out the program afterwards.