

# Bases

What do you get if you multiply 6 by 9? The answer, of course, is 42, but only if you do the calculations in base 13.

Given an integer  $B \geq 2$ , the *base B numbering system* is a manner of writing integers using only digits between 0 and  $B - 1$ , inclusive. In a number written in base  $B$ , the rightmost digit has its value multiplied by 1, the second rightmost digit has its value multiplied by  $B$ , the third rightmost digit has its value multiplied by  $B^2$ , and so on.

Some equations are true or false depending on the base they are considered in. The equation  $2+2=4$ , for instance, is true for any  $B \geq 5$  - it does not hold in base 4, for instance, since there is no digit '4' in base 4. On the other hand, an equation like  $2+2=5$  is never true.

Write a program that given an equation determines for which bases it holds.

## Input

Each line of the input contains a test case; each test case is an equation of the form "EXPR=EXPR", where both "EXPR" are arithmetic expressions with at most 17 characters.

All expressions are valid, and contain only the characters '+', '\*' and the digits from '0' to '9'. No expressions contain leading plus signs, and no numbers in it have leading zeros.

The end of input is indicated by a line containing only "=".

## Output

For each test case in the input your program should produce a single line in the output, indicating for which bases the given equation holds.

If the expression is true for infinitely many bases, print "B+", where  $B$  is the first base for which the equation holds.

If the expression is valid only for a finite set of bases, print them in ascending order, separated by single spaces.

If the expression is not true in any base, print the character '\*'.

## Example

### Input:

```
6*9=42
10000+3*5*334=3*5000+10+0
2+2=3
2+2=4
0*0=0
=
```

### Output:

```
13
```

6 10

\*

5+

2+