

695 Placing the Ops

In an old brainteaser you are given a set of digits and a set of operators and asked to arrange the digits and the operators to form an expression that has a particular value. This problem is a variant of that brainteaser.

In this problem you will be presented with a sequence of no more than ten digits (not necessarily unique) with an imbedded equal sign, and a collection of at least one but no more than five integer operators (from the set '+', '-', '*', and '/').

Your problem is to insert each of the operators between the correct pair of digits so the equation thus formed is arithmetically correct, assuming all operators have the same precedence, and that each side of the expression is evaluated strictly left to right. At least one digit will appear on each side of the equal sign.

For example, you might be given '957 = 52' and the operators '+' and '*'. Arranging these in the form '9*5+7=52' makes the equation correct. Or you might be given '123 = 456' and the operations '+', '+', '-', and '*'. If you arrange these in the form '1*2+3=4-5+6' you'll find each side of the equation has the value 5. As a final example consider '135 = 642' and the operators '+', '+', '*' and '*'. The arrangement '1+3*5=6+4*2' makes each side of the equation have the value 20 (note the strict left-to-right evaluation order on each side of the equation).

The division operator will yield only an integer result, and must obviously never be used with a denominator of zero. No value in an expression will require more than six decimal digits. Each operator must be used exactly once. The order in which the digits appear, and the placement of the equal sign cannot be altered.

Input

The input will consist of multiple test cases, each having two separate lines of input. On the first line for each case there will appear the digits and the imbedded equal sign, starting in the first column. The end of line will immediately follow the last digit. The second line will contain the operators to be used, starting in column one with the end of line immediately following the last operator. The operators will not be given in any particular order. The last test case will be followed by a line containing a dollar sign ('\$') in column one.

Output

For each test case you are to display the case number (numbered sequentially starting with 1), a colon, and the arithmetically correct expression with the operators shown in the proper positions. If there are multiple correct answers, then any one of them will be acceptable. If there is no solution for a particular case, display 'NO SOLUTION' instead of the equation.

Sample Input

```
957=52
+*
123=456
++-*
135=642
+***
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8916=95

//+

12=34

+-

\$

Sample Output

Case 1: $9*5+7=52$

Case 2: $1*2+3=4-5+6$

Case 3: $1+3*5=6+4*2$

Case 4: $8+9/16=9/5$

Case 5: NO SOLUTION