Arithmetic

A common sort of puzzle or problem one sees in newspapers, particularly at the beginning of each year goes along the lines of "make up a formula whose value is 2018, using the numbers 1 through 10 in that order". Of course the rules of the game are never entirely clear - in particular whether brackets are allowed, and what operations are permissible.

In this étude we'll look at a simplified model. The only operations allowed are $+$ and $\times$ and brackets are not permitted. However, we'll consider both 'proper' order of operations where

$$1 + 2 \times 3 = 7$$

and 'left to right' where

$$1 + 2 \times 3 =_{LR} 9.$$

Task

Input from `stdin` will be a sequence of scenarios. Each scenario is exactly two lines. The first line is the numbers to use, and the second line consists of a target value, followed by a space, followed by the character `N` or the character `L` indicating whether normal order of operations, or left to right order is to be assumed.

The output for a scenario should be a character representing the order used, then the target value, and finally an expression of the required value (using the character `*` for multiplication, and with spaces before and after each operation), or the word `impossible`.

Example

Input:

```
1 2 3
7 N
1 2 3
9 L
1 2 3
100 N
```

Output:

```
N 7 1 + 2 * 3
L 9 1 + 2 * 3
N 100 impossible
```

Relates to Objectives

2.1-3 2.5 2.10 3.4 3.5

(Individual 2)