

The problem of finding the next term of a given sequence of numbers is usually proposed in QI tests. We want to generate the  $N$  terms of a sequence from a given codification of the sequence.

Let  $S = (S_i)_{i \in \mathbb{N}}$  denote a sequence of real numbers whose  $i$ -order term is  $S_i$ . We codify a constant sequence with the following operator:

$$S = [n] \quad \text{meaning that} \quad S_i = n \quad \forall i \in \mathbb{N},$$

where  $n \in \mathbb{Z}$ . We also define the following operators on a given sequence of numbers  $S = (S_i)_{i \in \mathbb{N}}$ :

$$V = [m + S] \quad \text{meaning that} \quad V_i = \begin{cases} m & , i = 1 \\ V_{i-1} + S_{i-1} & , i > 1 \end{cases} ;$$

$$V = [m * S] \quad \text{meaning that} \quad V_i = \begin{cases} m * S_1 & , i = 1 \\ V_{i-1} * S_i & , i > 1 \end{cases} ;$$

where  $m \in \mathbb{N}$ . For example we have the following codifications:

$$\begin{aligned} [2 + [1]] &= 2, 3, 4, 5, 6 \dots & [1 + [2 + [1]]] &= 1, 3, 6, 10, 15, 21, 28, 36 \dots \\ [2 * [1 + [2 + [1]]]] &= 2, 6, 36, 360, 5400, 113400 \dots & [2 * [5 + [-2]]] &= 10, 30, 30, -30, 90, -450, 3150 \dots \end{aligned}$$

Given a codification, the problem is to write the first  $N$  terms of the sequence.

## Input

The input file contains several test cases. For each of them, the program input is a single line containing the codification, without any space, followed by an integer  $N$  ( $2 \leq N \leq 50$ ).

## Output

For each test case, the program output is a single line containing the list of first  $N$  terms of the sequence.

## Examples

Input	Output
[1+[2+[1]]] 5	1 3 6 10 15
[2*[1+[2+[1]]]] 6	2 6 36 360 5400 113400

## Sample Input

```
[2+[1]] 3
[2*[5+[-2]]] 7
```

## Sample Output

```
2 3 4
10 30 30 -30 90 -450 3150
```