

997 Show the Sequence

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

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[2+[1]] 3
[2*[5+[-2]]] 7
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Sample Output

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