

# Problem G

## Maximal Product

Time limit: 1 second  
Memory: 1024 megabytes

### Problem Description

Nam is fascinated by large numbers and is always intrigued by how numbers can be transformed to create new, particularly large, values. One day, Nam came up with an interesting idea while playing with an integer  $N$ . He realized that by expressing the integer  $N$  as the sum of smaller terms, the product of those terms can sometimes produce a value larger than  $N$  itself.

Specifically, Nam discovered that when breaking down a number into a sum of smaller numbers, sometimes the product of those terms would be larger than the sum itself. For example, when Nam encountered  $N = 10$ , he tried different ways of breaking it down:

- Split  $N = 10$  into  $2 + 2 + 2 + 2 + 2$ , where the product of these terms is  $2 \times 2 \times 2 \times 2 \times 2 = 32$ .
- Alternatively, split  $N = 10$  into  $3 + 3 + 4$ , where the product of these terms is  $3 \times 3 \times 4 = 36$ .

After experimenting with different splits, Nam found that the best way to split the number  $N$  into terms yields the largest possible product. This is something Nam loves, as it allows him to create larger numbers from an initial integer without simply summing them. As in the example with  $N = 10$ , the largest product Nam found was  $M = 36$ .

Now, Nam wants you to help him solve this problem with larger numbers. Specifically, for each integer  $N$  Nam encounters, you need to find a way to split  $N$  into a sum of terms such that the product of those terms is maximized. This is an interesting challenge for you to help Nam discover the largest  $M$  from the given  $N$ .

### Input:

- The problem will take a single positive integer  $N$  (with  $N \leq 10000$ ). This number  $N$  is the number Nam wants to break down into a sum of terms such that the product of those terms is the largest.

### Output:

- Your task is to find the largest  $M$  possible from breaking down  $N$  into a sum of terms such that their product is the largest, and print this result.

### Example:

INPUT	OUTPUT
10	36