North America Qualifier 2016
acm International Collegiate Programming Contest
IBM
event sponsor

Start 2016-09-24 18:00 CEST

ICPC North America Qualifier 2016 Open

Contest is over.

End 2016-09-24 23:

Problem G
Inverse Factorial

Problem ID:inversefactorial
Time limit:1 second
Memory limit:1024 MB

Author(s): Marko Berezovsky
Source: 2016 ICPC North American Qualifier Contest
License: 

A factorial $n!$ of a positive integer n is defined as the product of all positive integers smaller than or equal to n. For example,

$$21! = 1 \times 2 \times 3 \times \cdots \times 21 = 51\,090\,942\,171\,709\,440\,000.$$

It is straightforward to calculate the factorial of a small integer, and you have probably done it many times before. In this problem, however, your task is reversed. You are given the value of $n!$ and you have to find the value of n.

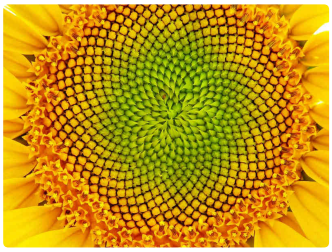

Photo by Ginette

Input

The input contains the factorial $n!$ of a positive integer n. The number of digits of $n!$ is at most 10^6.

Output

Output the value of n.

Sample Input 1

```
120
```

Sample Output 1

```
5
```

Sample Input 2

```
51090942171709440000
```

Sample Output 2

```
21
```

Sample Input 3

```
1088886945041835216076800000
```

Sample Output 3

```
27
```