The *factorial* of a positive integer number N, denoted as $N!$, is defined as the product of all positive integer numbers smaller or equal to N. For example $4! = 4 \times 3 \times 2 \times 1 = 24$.

Given a positive integer number N, you have to write a program to determine the smallest number k so that $N = a_1! + a_2! + \ldots + a_k!$, where every a_i, for $1 \leq i \leq k$, is a positive integer number.

Input

The input consists of several test cases. A test case is composed of a single line, containing one integer number N ($1 \leq N \leq 10^5$).

Output

For each test case in the output your program must output the smallest quantity of factorial numbers whose sum is equal to N.

Sample Input

```
10
25
```

Sample Output

```
3
2
```