

Problem D. Number With The Given Amount Of Divisors

Time limit 2000 ms

Mem limit 262144 kB

Given the number n , find the smallest positive integer which has exactly n divisors. It is guaranteed that for the given n the answer will not exceed 10^{18} .

Input

The first line of the input contains integer n ($1 \leq n \leq 1000$).

Output

Output the smallest positive integer with exactly n divisors.

Sample 1

Input	Output
4	6

Sample 2

Input	Output
6	12