E. Number With The Given Amount Of Divisors

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

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 ($1 \le n \le 1000$).

Output

Output the smallest positive integer with exactly n divisors.

Examples

input
4

output
6

input
6

output
12