Problem A. 2016

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

Happy New Year! The integer 2016 has exceptionally many divisors.

Let $d(n)$ be the number of divisors of n. For example, $d(12) = 6$ because it has 6 divisors: 1, 2, 3, 4, 6, and 12. A positive integer x is called *divisorful* if the number of positive integers y that satisfy both $y < x$ and $d(y) > d(x)$ is at most one. For example, 2016 is a divisorful number because among integers smaller than 2016, only 1680 has more divisors than 2016.

You are given an integer K. Compute the K-th (1-based) smallest divisorful number. If such number is strictly greater than 10^{18}, print -1 instead.

Input

The input contains one integer K ($1 \le K \le 10^9$).

Output

Print the answer in a single line.

Examples

standard input	standard output
10	14
1000000000	-1

Note

The smallest divisorful numbers are 1, 2, 3, 4, 5, 6, 8, 10, 12, 14, . . .