Problem C. Divisor Count

Input file:	`divisor-count.in`
Output file:	`divisor-count.out`
Time limit:	2 seconds
Memory limit:	256 mebibytes

In this problem, you have to find the first n integers which have exactly k divisors.

A *divisor* of an integer a is an integer b such that the quotient $\frac{a}{b}$ is also an integer.

Given n and k, find the first n positive integers which have exactly k distinct positive integer divisors and are not greater than 10^{18}. If the total number of such integers is less than n, find all of them.

Input

The first line of input contains two integers n and k: the number of integers to find and the required number of divisors ($1 \le n, k \le 110\,000$).

Output

Print n integers, each on a separate line: the first n positive integers which have exactly k distinct positive integer divisors and are not greater than 10^{18}, in increasing order. If there are $m < n$ such integers, print the number -1 in each of the remaining $n - m$ lines.

Examples

divisor-count.in	divisor-count.out
5 4	6 8 10 14 15
4 29	268435456 22876792454961 -1 -1

Explanations

In the first example, you have to print the first five integers with exactly four divisors. These are 6 (divisors 1, 2, 3 and 6), 8 (divisors 1, 2, 4 and 8), 10 (divisors 1, 2, 5 and 10), 14 (divisors 1, 2, 7 and 14) and 15 (divisors 1, 3, 5 and 15).

In the second example, you have to find the four minimal integers having 29 divisors each. These are $2^{28} = 268\,435\,456$, $3^{28} = 22\,876\,792\,454\,961$, $5^{28} = 37\,252\,902\,984\,619\,140\,625$ and $7^{28} = 459\,986\,536\,544\,739\,960\,976\,801$. The latter two integers are strictly greater than 10^{18}, so print -1 instead of each.