# D. Random Task

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

One day, after a difficult lecture a diligent student Sasha saw a graffitied desk in the classroom. She came closer and read: "Find such positive integer $n$, that among numbers $n+1$, $n+2$, ..., $2 \cdot n$ there are exactly $m$ numbers which binary representation contains exactly $k$ digits one".

The girl got interested in the task and she asked you to help her solve it. Sasha knows that you are afraid of large numbers, so she guaranteed that there is an answer that doesn't exceed $10^{18}$.

## Input

The first line contains two space-separated integers, $m$ and $k$ ($0 \le m \le 10^{18}$; $1 \le k \le 64$).

## Output

Print the required number $n$ ($1 \le n \le 10^{18}$). If there are multiple answers, print any of them.

### Examples

| input |
| --- |
| 1 1 |

| output |
| --- |
| 1 |

| input |
| --- |
| 3 2 |

| output |
| --- |
| 5 |