Number Mirror

Timelimit: 2 sec

Problem description

You have a 32-bit number x with bits $b_{31} \dots b_0$. Then

$$x = \sum_{k=0}^{31} 2^k b_k.$$

Compute the number x^R with bits $b_0 \dots b_{31}$. With other words: The bits have been horizontally mirrored about its mid point.

Input

A number n ($n \leq 10^9$) and a prime number p ($p < 100$).

Output

The output consists of the sum $x_1^R + \cdots + x_n^R$, where $x_1 = 1$ and $x_{k+1} = (x_k \cdot p) \bmod 2^{32}$.

For example, if $p = 13$, then

$$x_1, x_2, \ldots = 13, 169, 2197, 28561, 371293, 4826809, 62748517, 815730721, 2014564781, 419538377.$$

Sample input/output

Input	Output
`10 17`	`22648536778`