

Unique Sequence

Given a series defined by:

$$F(n)=(F(n-1)+F(n-1)+F(n-1)\dots+p\text{th time})\%1000000007 (10^9+7).$$

where p is any prime number between (1-100). Now you are provided n and n th term of the sequence. Find the first term of the given series.

Input

Input contains only three integers n , n th term and p separated by spaces.

Here n will be between 1 to 1000000000 inclusive.

and each term ranges between 0 to 1000000006 inclusive.

Output

Output a single integer that is first term of the sequence.

Example

Input: 5 32 2

Output: 2