

Encrypt a message

We denote φ the [Euler's totient function](#).

The goal of the problem is to send a message using a simplified RSA cryptosystem.

Here (n, e) denotes the public key, and m a message to be encrypted.

Input

The first line of the input consist of a single integer number t which determines the number of tests.

In each of next t lines there is three integer numbers n , e and m .

Constraints

- $0 < t \leq 100\,000$
- $0 < n \leq 100\,000\,000$, is the product of two distinct prime numbers (p, q)
- $0 < e \leq 100\,000\,000$, is coprime with $\varphi(n)$
- $1 < m \leq n$

Output

Print the result of m^e modulo n , that is the encrypted message.

Example

Input:

1
55 7 2

Output:

18