

Number Theory (Easy)

$f(n)$ and $g(n)$ are two functions defined as following :

$f(n) = \prod (p_i^{2e_i+1} + 1)$, where p_i is prime factor of n and e_i is highest power of p_i in n .

$g(n) = \sum (n/\text{gcd}(n,i))$; $1 \leq i \leq n$

For a given value of n , you have to compute $f(n)/g(n) \% 1000000007$.

Input

First line has T (≤ 10000), next T lines has $2 \leq n \leq 10^{12}$.

Output

$f(n)/g(n) \% 1000000007$ for each test case.

Example

Input:

2
2
4

Output:

3
3