Problem D. Easy Problem

Input file: `standard input`
Output file: `standard output`

A sequence $(a_1, a_2, \cdots, a_n)$ is (n, m, d)-good if $1 \le a_i \le m$ $(1 \le i \le n)$ and $\gcd(a_1, a_2, \cdots, a_n) = d$.

Given four integers n, m, d and k, you are asked to calculate the sum of $f(q, k)$ for each (n, m, d)-good sequence q, where $f((a_1, a_2, ...a_n), k) = (a_1 a_2 \cdots a_n)^k$ for the sequence $q = (a_1, a_2, ...a_n)$.

Since the answer could be very large, you only need to output the answer modulo 59964251.

Input

The first line is an integer T $(1 \le T \le 20)$, which is the number of test cases.

For each test case, the first line contains four integers n $(1 \le n \le 10^{100000})$, m $(1 \le m \le 100000)$, d $(1 \le d \le 100000)$, k $(1 \le k \le 10^9)$, which are described in the problem description.

Output

For each test case, output a line containing a single integer.

Example

standard input	standard output
1 3 3 3 1	27