Problem K. The Alchemist of the Discrete Mathematics

Input file:	`standard input`
Output file:	`standard output`
Time limit:	8 seconds
Memory limit:	512 megabytes

As a great alchemist, Sophie learns Discrete Mathematics very well.

One day, Sophie finds a magic prime number p. From her grandma's teaching, if a polynomial $F(x)$ satisfying that $F(x) \equiv 0 \pmod{p}$ has a solution, then the polynomial is mysterious.

To understand the property of mysterious polynomials, Sophie studies the roots of polynomial.

Given integer n, prime number p and parameter $c \in \mathbb{F}_p$, the set $S \subseteq \mathbb{F}_p$ is good, if there exist polynomial $f(x), g(x) \in \mathbb{F}_p[x]$ satisfying

- $\deg(f) = n$;
- $g(x) \mid f(x)$, i.e., $g(x)$ divides $f(x)$;
- Call T the set of roots of polynomial $h(x) = f(x)g(c \cdot x)$, then $S = T \cap \mathbb{F}_p$.

Sophie wonders the number of good sets given n, p and c. Since the answer may be too large, you should output the answer modulo 998244353.

If you are not familiar with those notations, please refer to the "Note section" for formal definition.

Input

The first line contains an integer $T(T \geq 1)$, denoting the number of test cases.

For each test case, there is a line containing three integers $p, c, n(1 \leq c < p \leq 5 \times 10^5, 0 \leq n \leq 10^6)$, whose meaning is already given in the previous statement.

It is guaranteed that the sum of p over all test cases won't exceed 10^7.

Output

For each test case, output an integer in a line, denoting the answer taken modulo 998244353.

Example

standard input	standard output
2 3 2 2 5 4 2	8 23

Note

Given a prime number p, $\mathbb{F}_p = \{0, 1, 2, \ldots, p-1\}$ is the set of integers with modular arithmetic and $\mathbb{F}_p[x] = \{f(x) = \sum_{i=0}^{n} a_i x^i \mid a_0, a_1, \ldots, a_n \in \mathbb{F}_p\}$.

The degree of polynomial $f(x) = \sum_{i=0}^{n} a_i x^i \in \mathbb{F}_p[x]$ is n if and only if $a_n \neq 0$. We note that the degree of the polynomial $h(x) \equiv 0$ is treated as $-\infty$.

Polynomial $f(x) = \sum_{i=0}^{n} f_i x^i$ divides $g(x)$ if and only if there exists a polynomial $h(x)$ satisfying $f(x) = g(x) \cdot h(x)$, i.e., the k-th coefficient of $f(x)$ is equal to that of $g(x) \cdot h(x)$ for all $k \geq 0$.