Coprime Power Sum



Given two integers, m and k, Alice loves to calculate their power sum using the following formula:

$$PowerSum(m,k) \equiv \sum_{i=1}^{m} i^k$$

Bob has a set, s, of n distinct *pairwise coprime* integers. Bob hates multiples of these integers, so he subtracts i^k from Alice's power sum for each $i \in [1,m]$ whenever there exists at least one $j \in [1,n]$ such that $i \mod s_j \equiv 0$.

Alice and Bob are now confused about the final value of the power sum and decide to turn to Eve for help. Can you write a program that helps Eve solve this problem? Given q queries consisting of n, m, and k, print the value of the power sum modulo 10^9+7 on a new line for each query.

Input Format

The first line contains an integer, q, denoting the number of queries. The $2 \cdot q$ lines describe each query over two lines:

- 1. The first line contains three space-separated integers denoting the respective values of n (the number of integers in Bob's set), k (the exponent variable in the power sum formula), and m (the upper range bound in the power sum formula).
- 2. The second line contains n distinct space-separated integers describing the respective elements in set s.

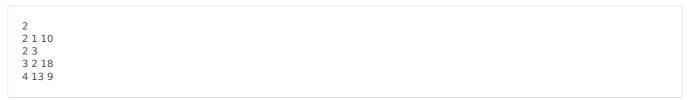
Constraints

- $1 \leq q \leq 2$
- $1 \le n \le 50$
- 0 < k < 10
- $1 < m < 10^{12}$
- $1 \le s_j \le 10^{12}$
- $s_i \neq s_j$, where $i \neq j$
- $gcd(s_i, s_j) \equiv 1$, where $i \neq j$

Output Format

For each query, print the resulting value of the power sum after Bob's subtraction, modulo 10^9+7 .

Sample Input



Sample Output

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13
1055
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Explanation

We perform the following q=2 queries:

- 1. Alice first calculates the sum $1^1+2^1+\ldots+10^1=55$. Bob's set contains 2 and 3 only, so he subtracts the power of all numbers that are multiples of 2 and/or 3 from Alice's sum to get: $55-2^1-3^1-4^1-6^1-8^1-9^1-10^1=13$. We then print the result of $13 \mod (10^9+7)=13$ on a new line.
- 2. Alice first calculates the sum $1^2+2^2+\ldots+18^2=2109$. Bob then subtracts multiples of 4, 9, and 13 from Alice's sum to get: $2109-4^2-8^2-9^2-12^2-13^2-16^2-18^2=1055$. We then print the result of $1055 \mod (10^9+7)=1055$ on a new line.