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Sereja and LCM

Problem Code: **SEALCM**

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In this problem Sereja is interested in number of arrays $A[1], A[2], \dots, A[N]$ ($1 \leq A[i] \leq M$, $A[i]$ - integer) such that least common multiple ([LCM](#) (http://en.wikipedia.org/wiki/Least_common_multiple)) of all its elements is divisible by number D .

Please, find sum of answers to the problem with $D = L, D = L+1, \dots, D = R$. As answer could be large, please output it modulo $(10^9 + 7)$.

Input

- First line of input contain integer T - number of test cases.
- For each test case, only line of input contain four integers N, M, L, R .

Output

For each test case, output required sum modulo $(10^9 + 7)$.

Constraints

- $1 \leq T \leq 10$
- $1 \leq N \leq 5 \cdot 10^6$
- $1 \leq L \leq R \leq M \leq 1000$

Subtasks

- Subtask #1: $1 \leq N, M \leq 10$ (25 points)
- Subtask #2: $1 \leq N, M \leq 1000$ (25 points)
- Subtask #3: original constraints (50 points)

Example

Input:

2

5 5 1 5

5 5 4 5

Output:

12310

4202

All submissions for this problem are available.

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Date Added: 23-10-2014

Time Limit: 5 secs

Source Limit: 50000 Bytes

Languages: CPP14, C, JAVA, PYTH 3.6, PYTH, CS2, ADA, PYPY, PYP3, TEXT, PAS fpc, RUBY, PHP, NODEJS, GO, TCL, HASK, PERL, SCALA, BASH, JS, PAS gpc, BF, LISP sbcl, CLOJ, LUA, D,