

A. Dinner Time

time limit per test: 1 second
memory limit per test: 256 megabytes

Given four integers n , m , p , and q , determine whether there exists an integer array a_1, a_2, \dots, a_n (elements may be negative) satisfying the following conditions:

- The sum of all elements in the array is equal to m :

$$a_1 + a_2 + \dots + a_n = m$$

- The sum of every p consecutive elements is equal to q :

$$a_i + a_{i+1} + \dots + a_{i+p-1} = q, \quad \text{for all } 1 \leq i \leq n - p + 1$$

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \leq t \leq 10^4$). The description of the test cases follows.

The first and only line of each test case contains four integers n , m , p , and q ($1 \leq p \leq n \leq 100$, $1 \leq q, m \leq 100$) — the length of the array, the sum of elements, the length of a segment, and the sum of a segment, respectively.

Output

For each test case, output "YES" (without quotes) if there exists an array satisfying the above conditions, and "NO" (without quotes) otherwise.

You can output "YES" and "NO" in any case (for example, strings "yES", "yes", and "Yes" will all be recognized as valid responses).

Example

input	Copy
5	
3 2 2 1	
1 1 1 1	
5 4 2 3	
10 7 5 2	
4 4 1 3	
output	Copy
YES	
YES	
YES	
NO	
NO	

Note

In the first test case, an example of an array satisfying the condition is $[1, 0, 1]$. This is because:

- $a_1 + a_2 + a_3 = 1 + 0 + 1 = 2 = m$
- $a_1 + a_2 = 1 + 0 = 1 = q$
- $a_2 + a_3 = 0 + 1 = 1 = q$

In the second test case, the only array satisfying the condition is $[1]$.

In the third test case, an example of an array satisfying the condition is $[-2, 5, -2, 5, -2]$.

In the fourth test case, it can be proven that there is no array satisfying the condition.

Codeforces Round 1024 (Div. 2)

Contest is running

02:08:11

Contestant



→ Submit?

Language:
GNU G++23 14.2 (64 bit, ms)

Choose file:
No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

→ Last submissions

Submission	Time	Verdict
319226068	May/11/2025 17:52	Pretests passed

→ Score table

	Score
Problem A	236
Problem B	472
Problem C	943
Problem D	1650
Problem E	2356
Problem F	2828
Successful hack	100
Unsuccessful hack	-50
Unsuccessful submission	-50
Resubmission	-50

* If you solve problem on 00:18 from the first attempt

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