

H Hyper Smawk Bros



You and Bob are playing Hyper Smawk Bros against each other, facing a single boss with health n.

You and Bob act alternately, and you start. On your turn, you may use an attack that deals an integer amount of damage x in $[1, m]$, replacing n with $n - x$. However, you cannot use the same x that your opponent just used on the previous turn (on the very first move of the game, any x in $[1, m]$ is allowed).

The winner is the first player to reduce the boss's health to $n \leq 0$. Determine whether you can force a win if Bob plays optimally.

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 only line of each test case contains two integers n, m ($1 \leq n \leq 10^6$, $2 \leq m \leq 10^6$) — the starting health n and the maximum damage per attack m.

Note that there are no constraints on the sum of n over all test cases, and there are no constraints on the sum of m over all test cases.

Output

For each test case, output `YES` if you can force a win against Bob, and `NO` otherwise.

The judge is case-insensitive (for example, `YES`, `Yes`, `yes`, `yEs` will all be recognized as positive answers).

Samples

Sample input 1	Sample output 1
8 6 9 20 10 69 2 42 9 42 10 44 9 44 10 400000 400000	YES YES NO NO YES YES NO YES

Explanation of sample 1.
In the first test case, you can win immediately by dealing damage 8, so that n becomes $6 - 8 = -2 \leq 0$.

In the second test case,

- you choose to deal damage 10;
- Bob can choose to deal any damage in $[1, 10]$ different from 10;
- then you can choose to deal damage 10 and win.

In the third test case,

- either you start by dealing damage 1, then Bob must deal damage 2, then you must deal damage 1, etc.;
- or you start by dealing damage 2, then Bob must deal damage 1, then you must deal damage 2, etc.

In both cases, you lose.

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