

Problem E. Identical Parity

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 512 megabytes

Let the value of a sequence be the sum of all numbers in it.

Determine whether there exists a permutation of length n such that the values of all subsegments of length k of the permutation share the same parity. The values share the same parity means that they are all odd numbers or they are all even numbers.

A subsegment of a permutation is a contiguous subsequence of that permutation. A permutation of length n is a sequence in which each integer from 1 to n appears exactly once.

Input

The first line contains one integer T ($1 \leq T \leq 10^5$), the number of test cases.

For each test case, the only line contains two integers n, k ($1 \leq k \leq n \leq 10^9$).

Output

For each test case, output “Yes” (without quotes) if there exists a valid permutation, or “No” (without quotes) otherwise.

You can output “Yes” and “No” in any case (for example, strings “YES”, “yEs” and “yes” will be recognized as positive responses).

Example

standard input	standard output
3	No
3 1	Yes
4 2	Yes
5 3	

Note

In the first test case, it can be shown that there does not exist any valid permutation.

In the second test case, $[1, 2, 3, 4]$ is one of the valid permutations. Its subsegments of length 2 are $[1, 2]$, $[2, 3]$, $[3, 4]$. Their values are 3, 5, 7, respectively. They share the same parity.

In the third test case, $[1, 2, 3, 5, 4]$ is one of the valid permutations. Its subsegments of length 3 are $[1, 2, 3]$, $[2, 3, 5]$, $[3, 5, 4]$. Their values are 6, 10, 12, respectively. They share the same parity.