Killer Cages (killer)

Valerio is a big fan of different sudokus, despite being bad at solving them. He is particularly interested in those with *killer cages*. A *killer cage* is a region where all the numbers must be distinct and have a certain sum.

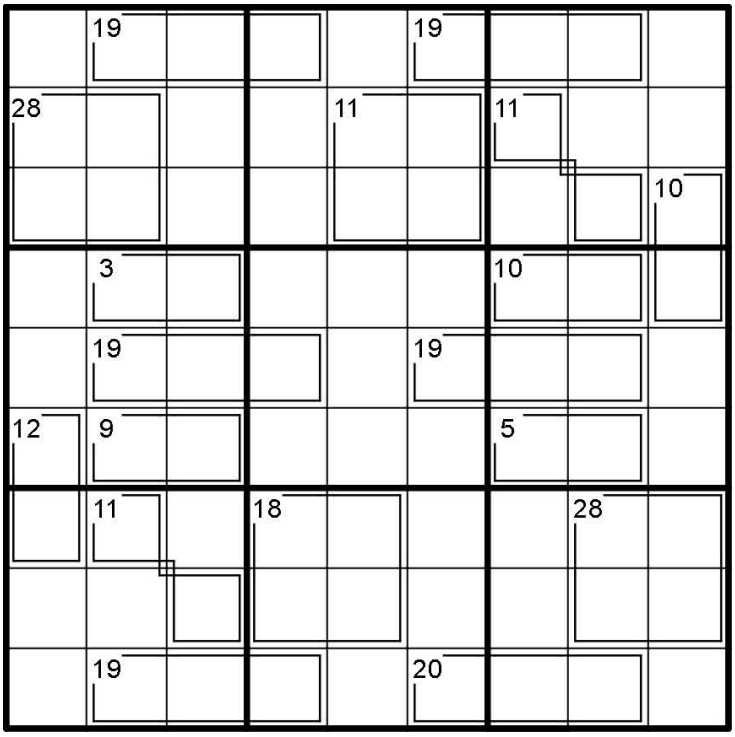

Figure 1: A sudoku with killer cages.

Valerio wants to get better at sudoku, so he is asking for your advice to improve. He will make you T questions of the following form: Given N and K, is there a **unique** way to write N as sum of K **distinct** positive integers?

☞ Among the attachments of this task you may find a template file `killer.*` with a sample incomplete implementation.

Input

The first line of the input file contains a single integer T, the number of test cases. T test cases follow.

Each test case consists of:

- a line containing the integers N and K.

Output

The output file must contain T lines corresponding to the test cases, each consisting of either `"YES"` or `"NO"`.

Constraints

- $1 \leq T \leq 10\,000$.
- $1 \leq N \leq 1\,000\,000\,000$.
- $1 \leq K \leq 1\,000\,000\,000$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (17 points) $T \leq 100$, $N \leq 10$, $K \leq 10$.

– **Subtask 3** (22 points) $N \leq 1000$, $K \leq 1000$.

– **Subtask 4** (33 points) $K \leq 100\,000$.

– **Subtask 5** (28 points) No additional limitations.

Examples

input	output
6 9 1 5 2 4 2 11 4 8 3 12 6	YES NO YES YES NO NO
5 100 12 92 13 1000 60 1000 10 420 69	NO YES NO NO NO

Explanation

In the **first sample case** Valerio asks you 6 questions:

- The only way to write 9 as a sum of 1 distinct positive integer is 9. The answer is "YES".
- It is possible to write 5 as both $1+4$ and $2+3$. The answer is "NO".
- The only way to write 4 as a sum of 2 distinct positive integers is $1+3$. The answer is "YES".

- The only way to write 11 as a sum of 4 distinct positive integers is $1 + 2 + 3 + 5$. The answer is `"YES"`.
- It is possible to write 8 as both $1 + 2 + 5$ and $1 + 3 + 4$. The answer is `"NO"`.
- It is not possible to write 12 as sum of 6 distinct positive integers. The answer is `"NO"`.