A. The Meaningless Game

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Slastyona and her loyal dog Pushok are playing a meaningless *game* that is indeed very interesting.

The *game* consists of multiple *rounds*. Its rules are very simple: in each round, a natural number k is chosen. Then, the one who says (or barks) it faster than the other wins the *round*. After that, the winner's score is multiplied by k^2, and the loser's score is multiplied by k. In the beginning of the *game*, both Slastyona and Pushok have scores equal to one.

Unfortunately, Slastyona had lost her notepad where the history of all n *games* was recorded. She managed to recall the final results for each games, though, but all of her memories of them are vague. Help Slastyona verify their correctness, or, to put it another way, for each given pair of scores determine whether it was possible for a game to finish with such result or not.

Input

In the first string, the number of games n $(1 \le n \le 350000)$ is given.

Each *game* is represented by a pair of scores a, b $(1 \le a, b \le 10^9)$ – the results of Slastyona and Pushok, correspondingly.

Output

For each pair of scores, answer "`Yes`" if it's possible for a game to finish with given score, and "`No`" otherwise.

You can output each letter in arbitrary case (upper or lower).

Example

input
6 2 4 75 45 8 8 16 16 247 994 1000000000 1000000

output
Yes Yes Yes No No Yes

Note

First *game* might have been consisted of one round, in which the number 2 would have been chosen and Pushok would have won.

The second *game* needs exactly two rounds to finish with such result: in the first one, Slastyona would have said the number 5, and in the second one, Pushok would have barked the number 3.