A. Cards for Friends

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

For the New Year, Polycarp decided to send postcards to all his n friends. He wants to make postcards with his own hands. For this purpose, he has a sheet of paper of size $w \times h$, which can be cut into pieces.

Polycarp can cut any sheet of paper $w \times h$ that he has in only two cases:

- If w is even, then he can cut the sheet in half and get two sheets of size $\frac{w}{2} \times h$;
- If h is even, then he can cut the sheet in half and get two sheets of size $w \times \frac{h}{2}$;

If w and h are even at the same time, then Polycarp can cut the sheet according to any of the rules above.

After cutting a sheet of paper, the total number of sheets of paper is increased by 1.

Help Polycarp to find out if he can cut his sheet of size $w \times h$ at into n or more pieces, using only the rules described above.

Input

The first line contains one integer t ($1 \le t \le 10^4$) — the number of test cases. Then t test cases follow.

Each test case consists of one line containing three integers w, h, n ($1 \le w, h \le 10^4$, $1 \le n \le 10^9$) — the width and height of the sheet Polycarp has and the number of friends he needs to send a postcard to.

Output

For each test case, output on a separate line:

- "YES", if it is possible to cut a sheet of size $w \times h$ into at least n pieces;
- "NO" otherwise.

You can output "YES" and "NO" in any case (for example, the strings yEs, yes, Yes and YES will be recognized as positive).

Example

input
5 2 2 3 3 3 2 5 10 2 11 13 1 1 4 4
output
YES NO YES YES YES

Note

In the first test case, you can first cut the 2×2 sheet into two 2×1 sheets, and then cut each of them into two more sheets. As a result, we get four sheets 1×1. We can choose any three of them and send them to our friends.

In the second test case, a 3×3 sheet cannot be cut, so it is impossible to get two sheets.

In the third test case, you can cut a 5×10 sheet into two 5×5 sheets.

In the fourth test case, there is no need to cut the sheet, since we only need one sheet.

In the fifth test case, you can first cut the 1×4 sheet into two 1×2 sheets, and then cut each of them into two more sheets. As a result, we get four sheets 1×1.