C. Predict Outcome of the Game

There are n games in a football tournament. Three teams are participating in it. Currently k games had already been played.

You are an avid football fan, but recently you missed the whole k games. Fortunately, you remember a guess of your friend for these k games. Your friend did not tell exact number of wins of each team, instead he thought that absolute difference between number of wins of first and second team will be d_1 and that of between second and third team will be d_2.

You don't want any of team win the tournament, that is each team should have the same number of wins after n games. That's why you want to know: does there exist a valid tournament satisfying the friend's guess such that no team will win this tournament?

Note that outcome of a match can not be a draw, it has to be either win or loss.

Input

The first line of the input contains a single integer corresponding to number of test cases t $(1 \leq t \leq 10^5)$.

Each of the next t lines will contain four space-separated integers n, k, d_1, d_2 $(1 \leq n \leq 10^{12}; 0 \leq k \leq n; 0 \leq d_1, d_2 \leq k)$ — data for the current test case.

Output

For each test case, output a single line containing either "`yes`" if it is possible to have no winner of tournament, or "`no`" otherwise (without quotes).

Examples

input

```
5
3 0 0 0
3 3 0 0
6 4 1 0
6 3 3 0
3 3 3 2
```

output

```
yes
yes
yes
no
no
```

Note

Sample 1. There has not been any match up to now $(k=0, d_1=0, d_2=0)$. If there will be three matches (1-2, 2-3, 3-1) and each team wins once, then at the end each team will have 1 win.

Sample 2. You missed all the games $(k=3)$. As $d_1=0$ and $d_2=0$, and there is a way to play three games with no winner of tournament (described in the previous sample), the answer is "`yes`".

Sample 3. You missed 4 matches, and $d_1=1, d_2=0$. These four matches can be: 1-2 (win 2), 1-3 (win 3), 1-2 (win 1), 1-3 (win 1). Currently the first team has 2 wins, the second team has 1 win, the third team has 1 win. Two remaining matches can be: 1-2 (win 2), 1-3 (win 3). In the end all the teams have equal number of wins (2 wins).