

Divisibility Test

Problem statement is simple and straight forward . You will be given a non-negative integer **P** of length **N** and you need to check whether it's divisible by **Q** ?

Integer **P** will be given in its decimal representation with **P₀** as leftmost digit and **P₁** as second digit from left !

Rest of the digit can be generated from the formula :

$$P_i = (4 * P_{i-1} + P_{i-2}) \text{ modulo } Q \quad \text{for } 2 \leq i \leq N-1$$

Input

The first line contains one integer **T** - denoting the number of test cases.

T lines follow each containing four integers **P₀** , **P₁** , **Q** and **N** !

Output

For each testcase output **YES** if the corresponding integer is divisible by **Q** and **NO** otherwise.

Constraints

- $T \leq 100000$
- $0 < P_0, P_1, Q < 10$
- $0 < N \leq 10^{18}$

Example

Input:

```
4
1 4 2 2
1 4 2 1
4 2 3 2
3 4 7 3
```

Output:

```
YES
NO
YES
NO
```

Explanation

Value of **P** is **14**, **1**, **42**, **345** in respective cases !