

Problem 3. Dice

Input file: `input.txt`
Output file: `output.txt`
Time limit: 1 second
Memory limit: 256 megabytes

Khodislav is playing a tabletop role-playing game. He has finally chosen his weapons to deal with a monster and casts the crushing strike. To do this, he rolls dice, calculates the sum of numbers on their faces, and says it aloud to the game master.

Rolling a group of identical dice is characterized by three numbers n , f , and m , where n is the number of the dice, f is the number of faces on each die, and m is the modifier. The faces carry all numbers from 1 through f , and each and any face can be rolled; all rolls are independent. For instance, if $n = 3$, $f = 8$, $m = 5$, to define the sum, the player must roll three eight-faced dice, sum up the results, and add five: this is usually written as $3d8 + 5$.

The game master wants to check if Khodislav could get the sum he has reported after rolling the dice.

Input

The first line of the input file contains a single integer B — the number of strikes ($1 \leq B \leq 10^5$) cast by Khodislav. The following lines describe the strikes, one per line. First comes an integer S — the sum reported by Khodislav. It is followed by three integers: n , f and m describing the group of dice ($1 \leq S \leq 300$, $1 \leq n \leq 10$, $2 \leq f \leq 20$, $0 \leq m \leq 10$).

Output

For each strike in a separate line, in the same order as in the input file, print YES, if the sum was achievable, and NO otherwise.

Examples

| input.txt | output.txt |
|-----------|------------|
| 5 | YES |
| 3 1 6 0 | NO |
| 1 1 8 1 | NO |
| 16 1 12 3 | NO |
| 1 2 4 0 | YES |
| 42 3 20 1 | |