1. U svako krajnje polje kvadratene table postavljen je po jedan oeteon. Npr. ako je tabla 2 × 2 postavljena su 4 žetona, a ako je 6 × 6 , postavljeno je 20 žetona. Odrediti da li se na tabli može naći tačno k žetona. Ulaz: Unosi se jedan cio broj k($1 \leq k \leq 10^6$) . Izlaz: Štampati YES ili NO.

   Rješenje: Na tabli dimanzija nxn, n>1 se moraju naći 4(n-1) žetona, jer svaka ivica ima n polja, što je ukupno 4n. Polja na ćoškovima table su računata po 2x tako da treba da ih oduzmemo jednom.

2. **Kocka (ICCG 2016)**

Ana je na stolu pronašla običnu kockicu s brojevima 1-6, kao u igri „Čovječe ne ljuti se”. Kockica izgleda kao na slici. Zbir brojeva na suprotnim stranama kockice uvijek je 7. Ana je postavila kockicu u gornje lijevo polje matrice sa R redova i S kolona. Okrenula je tako da se na gornjoj strani nalazi broj 1, a na desnoj broj 3. Zatim počne kotrljati kockicu prema sljedećim pravilima:

- Kotrlja kockicu udesno, sve dok ne dođe do posljednje kolone
- Otkotrlja je jedno polje prema dolje (u sljedeći red)
- Kotrlja kockicu ulijevo, sve dok ne dođe do prve kolone
- Otkotrlja je jedno polje prema dolje (u sljedeći red)

Ove korake Ana ponavlja sve dok može, tj. dok god je moguće pomjeranje u sljedeći red. Za svako polje u matrici Ana zapiše broj koji se pojavljuje na gornjoj strani kockice u trenutku kada se kockica nađe na tom polju, i na kraju sabere sve zapisane brojeve. Pomozite Ani i napišite program koji će izračunati zbir zapisanih brojeva.

Ulazni podaci :

U prvom i jedinom redu nalaze se dva prirodna broja R i S ($1 \leq R, S \leq 100000$), dimenzije matrice.

Izlazni podaci :

U prvi i jedini red štampajte traženi zbir.

Bodovanje : U 50% test podataka brojevi R i S biće manji ili jednaki od 100.

Ulaz	Izlaz
3 2	19
3 4	42
737 296	763532

3. Floor Number https://codeforces.com/contest/1426/problem/A

Vasya goes to visit his classmate Petya. Vasya knows that Petya's apartment number is n.

There is only one entrance in Petya's house and the distribution of apartments is the following: the first floor contains 2 apartments, every other floor contains x apartments each. Apartments are numbered starting from one, from the first floor. I.e. apartments on the first floor have numbers 1 and 2, apartments on the second floor have numbers from 3 to $(x+2)$, apartments on the third floor have numbers from $(x+3)$ to $(2 \cdot x+2)$, and so on.

Your task is to find the number of floor on which Petya lives. Assume that the house is always high enough to fit at least n apartments.

You have to answer t independent test cases.

Input

The first line of the input contains one integer t ($1 \le t \le 1000$) — the number of test cases. Then t test cases follow.

The only line of the test case contains two integers n and x ($1 \le n, x \le 1000$) — the number of Petya's apartment and the number of apartments on each floor of the house except the first one (there are two apartments on the first floor).

Output

For each test case, print the answer: the number of floor on which Petya lives.

Example

input

```
4
7 3
1 5
22 5
987 13
```

output

```
3
1
5
77
```

Note

Consider the first test case of the example: the first floor contains apartments with numbers 1 and 2, the second one contains apartments with numbers 3, 4 and 5, the third one contains apartments with numbers 6, 7 and 8. Therefore, Petya lives on the third floor.

In the second test case of the example, Petya lives in the apartment 1 which is on the first floor.

4. Lavirint

Petar je za rođendan dobio lavirint. Lavirint je matrica *n* x *m*, takva da je svako polje ili slobodno polje ili zid. Mozete da pređete sa jednog na drugo polje samo ako su oba polja slobodna i imaju jednu zajednicku ivicu.

Pozato je da na pocetku postoji put izmedju svaka slobodna dva polja. Petaru se ne sviđa kad lavirint ima malo zidova pa je odlucio da tačno *k* slobodnih polja pretvori u zidove tako da preostala slobodna polja ostanu povezana. Pomzite Petru da odluči koja će slobodna polja da pretori u zidove tako da dobije lavirint kakav on želi.

Ulaz:

Prvi red sadrži tri cijela broja *n,m,k* ($1 \le n,m \le 500$, $0 \le k < s$), gdje su n i m dimenzije lavirinta, k je broj zidova koje Petar želi da doda, s predstavlja broj slobodnih polja u pocetnom lavirintu.

Svaka od sledećih n linija sadrži m karaktera. Oni opisuju početni lavirint. Ako je karakter ". ", onda je odgovarajuće polje slobodno, ako je karakter "#", onda je odgovarajuće polje zid.

Izlaz:

Treba štampati n linija sa po m karatkera koje opisuju lavirint kakav Petar želi da dobije. Polja koja ste pretvoili u zidove treba obeliziti sa "X", ostala polja ne treba mijenjati.

Ako postoji više rješenja treba štampati bilo koje.

ulaz	izlaz
3 4 2 #..# ..#. #...	#.X# X.#. #...
5 4 5 #... #.#. .#.. ...# .#.#	#XXX #X#. X#.. ...# .#.#

5. Symmetric Matrix https://codeforces.com/contest/1426/problem/B

Masha has n types of tiles of size 2×2. Each cell of the tile contains one integer. Masha has an **infinite number** of tiles of each type.

Masha decides to construct the square of size $m \times m$ consisting of the given tiles. This square also has to be a *symmetric with respect to the main diagonal matrix*, and each

cell of this square has to be covered with exactly one tile cell, and also sides of tiles should be parallel to the sides of the square. All placed tiles cannot intersect with each other. Also, each tile should lie inside the square. See the picture in Notes section for better understanding.

Symmetric with respect to the main diagonal matrix is such a square s that for each pair (i,j) the condition $s[i][j]=s[j][i]$ holds. I.e. it is true that the element written in the i-row and j-th column equals to the element written in the j-th row and i-th column.

Your task is to determine if Masha can construct a square of size $m \times m$ which is a symmetric matrix and consists of tiles she has. Masha can use any number of tiles of each type she has to construct the square. Note that she **can not** rotate tiles, she can only place them in the orientation they have in the input.

You have to answer t independent test cases.

Input

The first line of the input contains one integer t ($1 \le t \le 100$) — the number of test cases. Then t test cases follow.

The first line of the test case contains two integers n and m ($1 \le n \le 100$, $1 \le m \le 100$) — the number of types of tiles and the size of the square Masha wants to construct.

The next $2n$ lines of the test case contain descriptions of tiles types. Types of tiles are written one after another, each type is written on two lines.

The first line of the description contains two positive (greater than zero) integers not exceeding 100 — the number written in the top left corner of the tile and the number written in the top right corner of the tile of the current type. The second line of the description contains two positive (greater than zero) integers not exceeding 100 — the number written in the bottom left corner of the tile and the number written in the bottom right corner of the tile of the current type.

It is forbidden to rotate tiles, it is only allowed to place them in the orientation they have in the input.

Output

For each test case print the answer: "YES" (without quotes) if Masha can construct the square of size $m \times m$ which is a symmetric matrix. Otherwise, print "NO" (withtout quotes).

Example

input

```
6
3 4
1 2
5 6
5 7
7 4
```

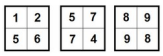
```
8 9
9 8
2 5
1 1
1 1
2 2
2 2
1 100
10 10
10 10
1 2
4 5
8 4
2 2
1 1
1 1
1 2
3 4
1 2
1 1
1 1
```

output

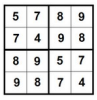
```
YES
NO
YES
NO
YES
YES
```

Note

The first test case of the input has three types of tiles, they are shown on the picture below.



Masha can construct, for example, the following square of size 4×4 which is a symmetric matrix:



SVIM TAKMIČARIMA SE PREPOUČUJE DA POGLEDAJU ZADATKE I RJEŠENJA KOJI SU BILI NA PRVOM KOLU HONI TAKMIČENJA, I DA SE

PRIJAVE ZA DRUGO KOLO KOJE ĆE SE ODRŽATI 14.11.2020. (https://hsin.hr/coci/)