

## 1007.Shinobu loves trip

Input file:            **standard input**  
 Output file:          **standard output**  
 Time limit:           **3 seconds**  
 Memory limit:        **256 megabytes**

As a cold-blooded, hot-blooded, and iron-blooded vampire, Shinobu loves traveling around.

There are  $P$  countries in total, numbered  $0, 1, \dots, P - 1$ . (It is guaranteed that  $P$  is a prime number)

It is known that when Shinobu is in the country numbered  $i$ , the next country she visits must be the country numbered  $(i \cdot a) \% P$  ( $a$  is a constant parameter), and it takes Shinobu 1 day to go from one country to another.

In order to travel smoothly, Shinobu has customized  $n$  travel plans, and the  $i$ -th travel plan is represented by the starting country  $s_i$  and the travel days  $d_i$ .

For example, if  $P = 233$ ,  $a = 2$ , a plan's starting country is 1 and travel days is 2, then Shinobu will visit the city  $\{1, 2, 4\}$  according to this plan.

Playf knows these travel plans and the value of parameter  $a$ , now he wants to ask you  $q$  questions. The  $i$ -th question asks how many different travel plans will make shinobu visit the country  $x_i$ .

### Input

The first line of the input contains one integer  $T$  ( $1 \leq T \leq 5$ ) — the number of test cases. Then  $T$  test cases follow.

For each testcase, the first line contains four integers  $P, a, n, q$  ( $2 \leq a < P \leq 1000000007, 1 \leq n \leq 1000, 1 \leq q \leq 1000$ ) — the number of countries, the value of  $a$ , the number of Shinobu's travel plans and the number of playf's questions.

Each of the next  $n$  lines contains two integers  $s_i, d_i$  ( $0 \leq s_i < P, 1 \leq d_i \leq 200000$ ) — the starting country and the travel days.

Each of the next  $q$  lines contains one integer  $x_i$  ( $0 \leq x_i < P$ ) — playf's questions.

It is guaranteed that  $P$  is a prime number.

### Output

For each testcase, print  $q$  lines, the  $i$ -th line contains one integer — the answer to the  $i$ -th question.

### Example

standard input	standard output
2	1
3 2 1 1	2
1 1	1
2	
5 4 3 2	
1 4	
4 3	
2 100000	
4	
2	