

# 1398 Meteor

The famous Korean internet company **nhn.** has provided an internet-based photo service which allows The famous Korean internet company users to directly take a photo of an astronomical phenomenon in space by controlling a high-performance telescope owned by **nhn.**. A few days later, a meteoric shower, known as the biggest one in this century, is expected. **nhn.** has announced a photo competition which awards the user who takes a photo containing as many meteors as possible by using the **nhn.** photo service. For this competition, **nhn.** provides the information on the trajectories of the meteors at their web page in advance. The best way to win is to compute the moment (the time) at which the telescope can catch the maximum number of meteors.

You have  $n$  meteors, each moving in uniform linear motion; the meteor  $m_i$  moves along the trajectory  $p_i + t \times v_i$  over time  $t$ , where  $t$  is a non-negative real value,  $p_i$  is the starting point of  $m_i$  and  $v_i$  is the velocity of  $m_i$ . The point  $p_i = (x_i, y_i)$  is represented by  $X$ -coordinate  $x_i$  and  $Y$ -coordinate  $y_i$  in the  $(X, Y)$ -plane, and the velocity  $v_i = (a_i, b_i)$  is a non-zero vector with two components  $a_i$  and  $b_i$  in the  $(X, Y)$ -plane. For example, if  $p_i = (1, 3)$  and  $v_i = (-2, 5)$ , then the meteor  $m_i$  will be at the position  $(0, 5.5)$  at time  $t = 0.5$  because  $p_i + t \times v_i = (1, 3) + 0.5 \times (-2, 5) = (0, 5.5)$ . The telescope has a rectangular frame with the lower-left corner  $(0, 0)$  and the upper-right corner  $(w, h)$ . Refer to Figure 1. A meteor is said to be in the telescope frame if the meteor is in the interior of the frame (not on the boundary of the frame). For example, in Figure 1,  $p_2, p_3, p_4$ , and  $p_5$  cannot be taken by the telescope at any time because they do not pass the interior of the frame at all. You need to compute a time at which the number of meteors in the frame of the telescope is maximized, and then output the maximum number of meteors.

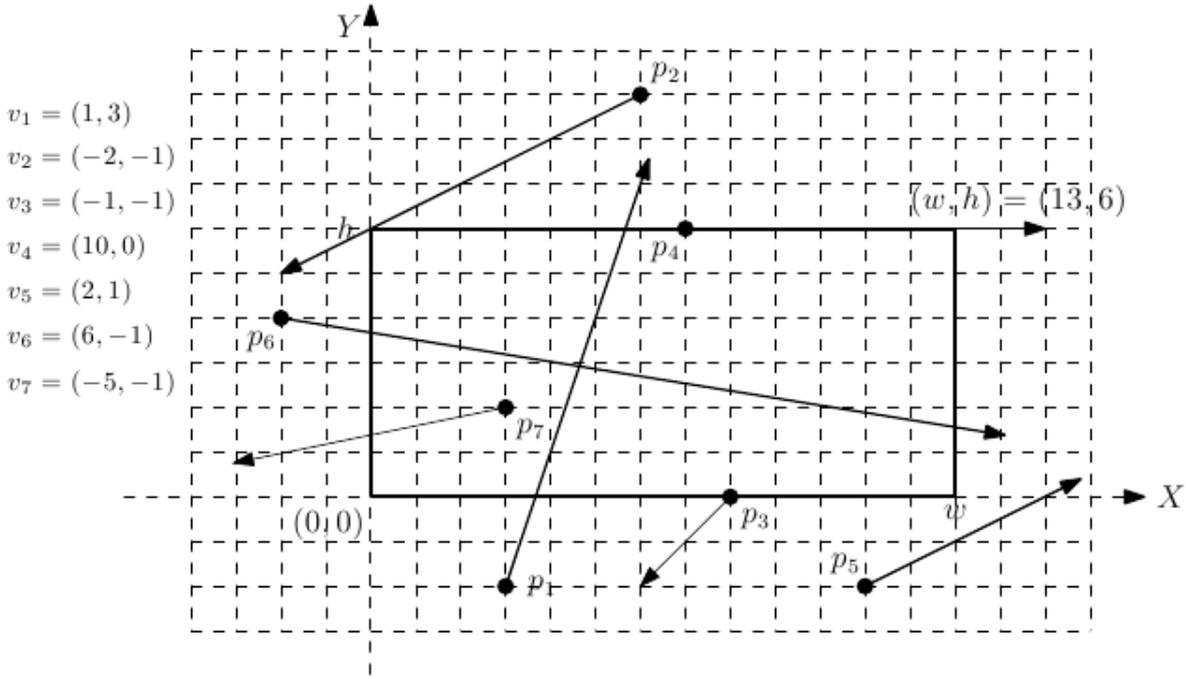


Figure 1

## Input

Your program is to read the input from standard input. The input consists of  $T$  test cases. The number of test cases  $T$  is given in the first line of the input. Each test case starts with a line containing two integers  $w$  and  $h$  ( $1 \leq w, h \leq 100,000$ ), the width and height of the telescope frame, which are separated by single space. The second line contains an integer  $n$ , the number of input points (meteors),  $1 \leq n \leq 100,000$ . Each of the next  $n$  lines contain four integers  $x_i, y_i, a_i$ , and  $b_i$ ;  $(x_i, y_i)$  is the starting point  $p_i$  and  $(a_i, b_i)$  is the nonzero velocity vector  $v_i$  of the  $i$ -th meteor;  $x_i$  and  $y_i$  are integer values between  $-200,000$  and  $200,000$ , and  $a_i$  and  $b_i$  are integer values between  $-10$  and  $10$ . Note that at least one of  $a_i$  and  $b_i$  is not zero. These four values are separated by single spaces. We assume that all starting points  $p_i$  are distinct.

## Output

Your program is to write to standard output. Print the maximum number of meteors which can be in the telescope frame at some moment.

## Sample Input

```
2
4 2
2
-1 1 1 -1
5 2 -1 -1
13 6
7
3 -2 1 3
6 9 -2 -1
8 0 -1 -1
7 6 10 0
11 -2 2 1
-2 4 6 -1
3 2 -5 -1
```

## Sample Output

```
1
2
```