P23

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
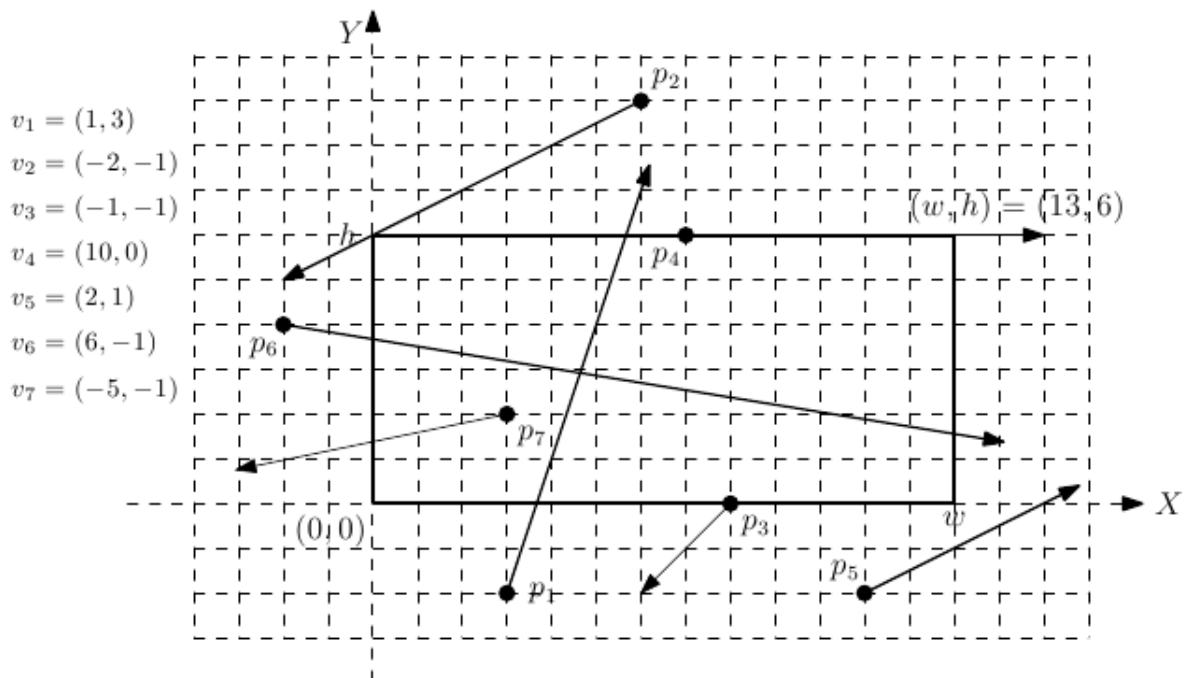of meteors.

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
```

P24

George took sticks of the same length and cut them randomly until all parts became at most 50 units long. Now he wants to return sticks to the original state, but he forgot how many sticks he had originally and how long they were originally. Please help him and design a program which computes the smallest possible original length of those sticks. All lengths expressed in units are integers greater than zero.

Input

The input file contains blocks of 2 lines. The first line contains the number of sticks parts after cutting. The second line contains the lengths of those parts separated by the space. The last line of the file contains '0'.

Output

The output file contains the smallest possible length of original sticks, one per line.

Sample Input

```
9
5 2 1 5 2 1 5 2 1
4
1 2 3 4
0
```

Sample Output

```
6
5
```