

A. Crazy Town

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

Crazy Town is a plane on which there are n infinite line roads. Each road is defined by the equation $a_i x + b_i y + c_i = 0$, where a_i and b_i are not both equal to the zero. The roads divide the plane into connected regions, possibly of infinite space. Let's call each such region a block. We define an intersection as the point where at least two different roads intersect.

Your home is located in one of the blocks. Today you need to get to the University, also located in some block. In one step you can move from one block to another, if the length of their common border is nonzero (in particular, this means that if the blocks are adjacent to one intersection, but have no shared nonzero boundary segment, then it are not allowed to move from one to another one in one step).

Determine what is the minimum number of steps you have to perform to get to the block containing the university. It is guaranteed that neither your home nor the university is located on the road.

Input

The first line contains two space-separated integers x_1, y_1 ($-10^6 \leq x_1, y_1 \leq 10^6$) — the coordinates of your home.

The second line contains two integers separated by a space x_2, y_2 ($-10^6 \leq x_2, y_2 \leq 10^6$) — the coordinates of the university you are studying at.

The third line contains an integer n ($1 \leq n \leq 300$) — the number of roads in the city. The following n lines contain 3 space-separated integers ($-10^6 \leq a_i, b_i, c_i \leq 10^6$; $|a_i| + |b_i| > 0$) — the coefficients of the line $a_i x + b_i y + c_i = 0$, defining the i -th road. It is guaranteed that no two roads are the same. In addition, neither your home nor the university lie on the road (i.e. they do not belong to any one of the lines).

Output

Output the answer to the problem.

Examples

input
1 1 -1 -1 2 0 1 0 1 0 0
output
2

input
1 1 -1 -1 3 1 0 0 0 1 0 1 1 -3
output
2

Note

Pictures to the samples are presented below (A is the point representing the house; B is the

Codeforces Round #284 (Div. 1)

Finished

→ Virtual participation

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Start virtual contest

→ Problem tags

geometry

No tag edit access

→ Contest materials

- Announcement 
- Tutorial 

point representing the university, different blocks are filled with different colors):

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