C. Tavas and Karafs

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Karafs is some kind of vegetable in shape of an $1 \times h$ rectangle. Tavaspolis people love Karafs and they use Karafs in almost any kind of food. Tavas, himself, is crazy about Karafs.

Each Karafs has a positive integer height. Tavas has an infinite **1-based** sequence of Karafses. The height of the i-th Karafs is $s_i = A + (i - 1) \times B$.

For a given m, let's define an m-bite operation as decreasing the height of at most m distinct not eaten Karafses by 1. Karafs is considered as eaten when its height becomes zero.

Now SaDDas asks you n queries. In each query he gives you numbers l, t and m and you should find the largest number r such that $l \leq r$ and sequence $s_l, s_{l+1}, \ldots, s_r$ can be eaten **by performing m-bite no more than t times** or print -1 if there is no such number r.

Input

The first line of input contains three integers A, B and n ($1 \leq A, B \leq 10^6$, $1 \leq n \leq 10^5$).

Next n lines contain information about queries. i-th line contains integers l, t, m ($1 \leq l, t, m \leq 10^6$) for i-th query.

Output

For each query, print its answer in a single line.

Examples

input
2 1 4 1 5 3 3 3 10 7 10 2 6 4 8
output
4 -1 8 -1

input
1 5 2 1 5 10 2 7 4
output
1 2