8: Sticky business

Level: Medium
Time limit: 2.5 seconds

If you ask a **via** member what their favourite activity is, there is only one correct answer: Placing **via** stickers on random objects! This tradition goes back in time to many many years ago, back to when associations still had to compete with each other to determine which association had rights to which room. To mark something as property of **via**, one must simply stick **via** stickers on it, the more the better! Knowing this, it makes sense that the old association room was covered in so many stickers.

One disadvantage of this system is that the farther away you get from a **via** sticker, the weaker its claim becomes, until it eventually fades away entirely and the territory you are in is no longer claimed. To strengthen a sticker and its claim, you can add another sticker on top of it. Next time you walk around Science Park, try and see how many of these stickers you can find.

The board would like to know how many stickers they have to place to optimally cover Lab42 such that they can rightfully call it property of **via**. They have asked you to help them with this, starting with a single hallway on the ground floor. This hallway of n meters long currently has no stickers at all. The board will give you one of three instructions:

1. `+ s x`: Place s stickers on location x
2. `- s x`: Remove s stickers on location x. It is guaranteed location x currently has exactly s stickers.
3. `? x`: Calculate how strong **via**'s claim is on location x.

To summarize, a location x has a strength of s, if s stickers have been placed there. Then, every meter, the strength of the sticker is reduced by a factor $1 - p$.

Input

The input starts with one line with integers n, q and p ($1 \leq n, q \leq 2 \cdot 10^5$, $0 \leq p \leq 1$), the length of the hallway, the amount of queries, and the decay factor of the stickers (with at most 6 digits behind the decimal point). Next, q lines, each containing one of the described queries.

Output

At any time, the strength at any location can be represented as a fraction $\frac{X}{Y}$, where $Y \bmod 10^9 + 7 \neq 0$. For each query that asks for the strength at a location, output the strength as $X \cdot Y^{-1} \bmod 10^9 + 7$.

Sample input 1

```
5 6 0.5
+ 10 3
? 1
? 2
? 3
? 4
? 5
```

Sample output 1

```
500000006
5
10
5
500000006
```