Problem 4. Dividing Apple-Pie

Time Limit : 8 second
Memory Limit : 512 megabytes

Description

Hyon Il is a virtuous student.

He always be very kind to his mates and all the friends like him.

One day he brings a delicious and big apple-pie and is going to divide it to his friends.

It is interesting that the apple-pie is shaped ellipse.

He always does two kinds of operations.

The first kind is that he calculates the area of remained apple-pie between the angle L and R.

The second kind is that he gives all the pieces of pie between the angle L and R.

Hyon Il placed the pie on the Cartesian coordinate, so the pie is located inside the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$.

You, Hyon Il's brother, want to test younger brother's calculating ability so you must calculate all the queries.

Can you do it? Ok.

Oh, one more condition…

Let $prev$ is a last printed number, then the real L and R is calculated as following formulas.

$$L_{real} = (L_{given} + prev)\ \%\ 360,\ R_{real} = (R_{given} + prev)\ \%\ 360$$

If $L_{real} > R_{real}$ then you must swap two values.

You must operate with two values L_{real} and R_{real}.

Initially $prev = 0$.

Input

The first line of input file contains three integers - $a\ b\ n(1 \le a, b \le 100,\ n \le 300000)$.

a and b is a number described above and n is a number of operations.

Next n lines contains three integers "$type\ L\ R$".

($1 \le type \le 2$, and L and R are random real numbers.)

It is guaranteed that $0 \le L + prev, 0 \le R + prev$.

Output

For each operation 1, you must calculate the result.

Please round to 5 digits after the decimal point.

Sample Input

```
10 10 3
1 10.00000 30.00000
2 40.00000 70.00000
1 10.00000 300.00000
```

Sample Output

```
17.45329
226.89280
```

Note

To make problem easy, L and R are also given with 5 digits after the decimal points.

And $prev$ is a **printed** number of last 1-type query.

For example, $prev = 17.45329$ though the real answer is $17.453297519943295769236907684886\cdots$.