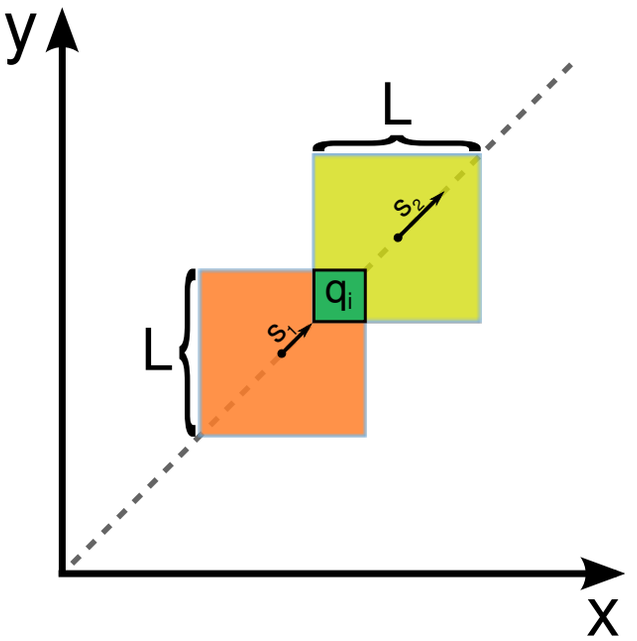
Sherlock and Moving Tiles

Problem Statement

Sherlock is given 2 square tiles, initially both of whose sides have length L placed in an $x-y$ plane; so that the left bottom of each square coincides with the the origin and their sides are parallel to the axes.

At $t=0$, both squares start moving along line $y=x$ (along the positive x and y) with velocities S_1 and S_2.

For each query of form q_i, Sherlock has to report the time at which the overlapping area of tiles is equal to q_i.



Note: Assume all values are in standard units.

Input Format

First line contains integers L, S_1, S_2. Next line contains Q, the number of queries. Each of the next Q lines consists of one integer q_i in one line.

Constraints

$1 \leq L, S_1, S_2 \leq 10^9$
$1 \leq Q \leq 10^5$
$1 \leq q_i \leq L^2$
$S_1 \neq S_2$

Output Format

For each query, print the required answer in one line. Your answer will be considered correct if it is at most 0.0001 away from the true answer. See the explanation for more details.

Sample Input

```
10 1 2
2
50
100
```

Sample Output

```
4.1421
0.0000
```

Explanation

For the first case, note that the answer is around `4.1421356237...`, so any of the following will be accepted:

```
4.1421356237
4.14214
4.14215000
4.1421
4.1422
```