Problem B
Buses

Time limit: 1 second

Problem Description

There is a long straight road of length ℓ meters, where *position* p denotes the point on the road that is p meters away from the starting point. Along this road, there are n buses moving in the positive direction, each traveling at the **same constant speed** of x meters per minute. The i-th bus is currently at position s_i and continues moving until it reaches its designated destination at position t_i. Once a bus reaches its destination, it ceases operation and all passengers must disembark.

There are also m people who wish to reach the end of the road (position ℓ). The current position of the i-th person is p_i, and each person can walk at a speed of **at most** y meters per minute. If a person is at the same position as a bus, they may hop on the bus instantly. While riding a bus, they may hop off at any moment. The time required to board or leave a bus is considered negligible. Buses always move at a constant speed x and never wait for passengers.

Your task is to determine the minimum possible time for each person to reach the end of the road.

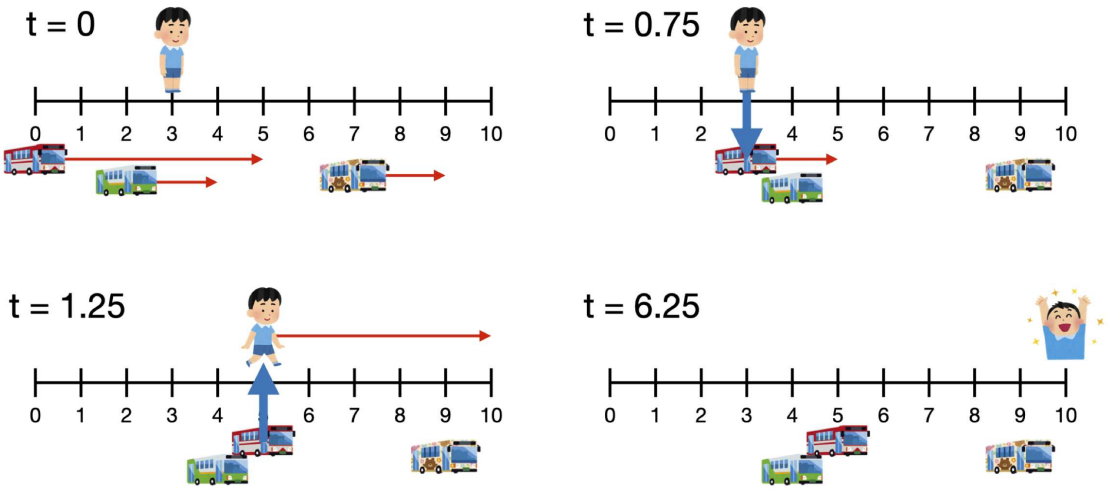


Figure B.1: An illustration for sample input 1.

Input Format

The first line contains five integers n, m, ℓ, x, and y, representing the number of buses, the number of people, the length of the road, the speed of the buses, and the walking speed of the people, respectively.

The i-th of the following n lines contains two integers s_i and t_i, representing the starting position and the destination position of the i-th bus.

The i-th of the following m lines contains one integer p_i, representing the current position of the i-th person.

Output Format

Print m lines. The i-th line contains a number which is the minimum time (in minutes) for the i-th person to reach the end of the road.

Your answer will be accepted if the absolute or relative error does not exceed 10^{-6}. Formally, let your answer be a, and the jury's answer be b. Your answer is considered correct if $\frac{|a-b|}{\max(1,|b|)} \leq 10^{-6}$.

Technical Specification

- $1 \leq n \leq 2 \times 10^5$
- $1 \leq m \leq 2 \times 10^5$
- $1 \leq \ell \leq 10^9$
- $1 \leq y < x \leq 10^6$
- $0 \leq s_i < t_i \leq \ell$
- $0 \leq p_i \leq \ell$

Sample Input 1

```
3 3 10 4 1
0 5
2 4
7 9
3
8
5
```

Sample Output 1

```
6.25
1.5
5
```

Explanation of Sample 1: A person initially at position $p = 3$ can reach the end of the road in 6.25 minutes as follows:

- Wait for Bus 1 to arrive.
- Hop on the bus and ride it until it reaches its destination at position $t_1 = 5$.
- Get off the bus and walk the remaining distance to position $\ell = 10$.

As shown in Figure B.1, the total time spent is 6.25 minutes, which is the minimum possible.

Sample Input 2

```
1 3 100 100 1
1 2
0
1
2
```

Sample Output 2

```
100
98.01
98
```

This page is intentionally left blank.