Buses

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

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.

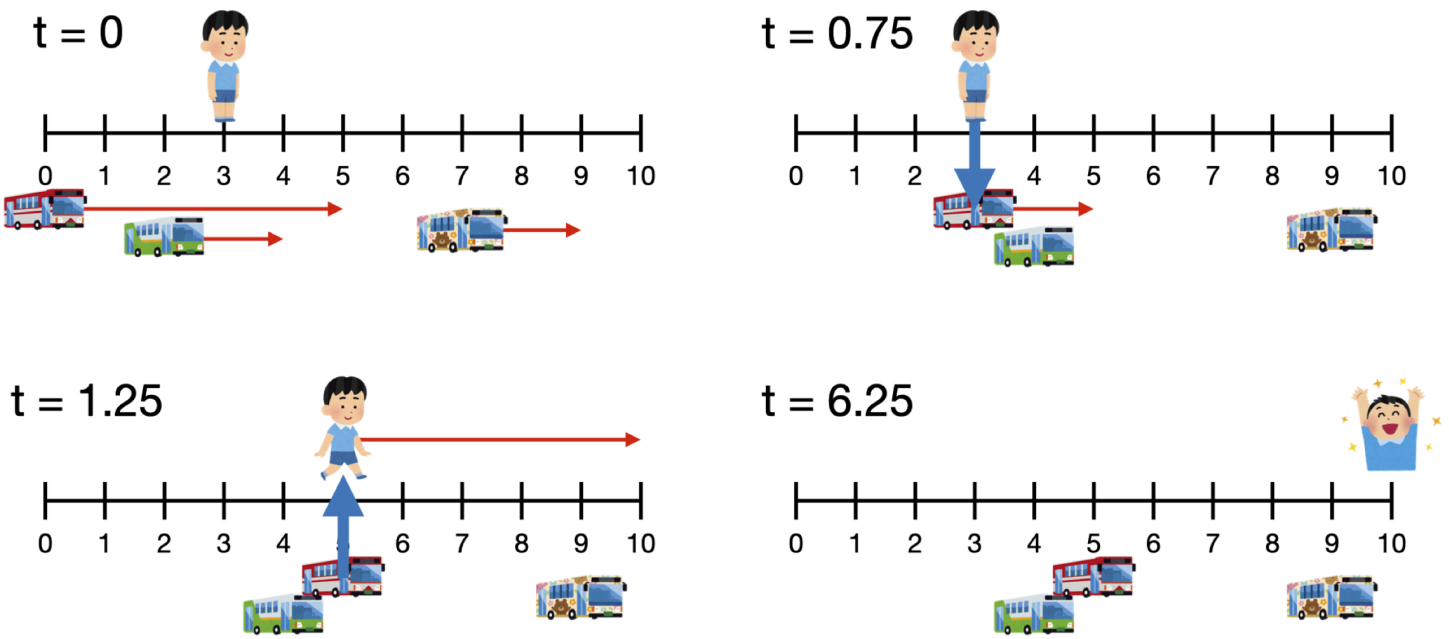

Figure 1: An illustration for sample input 1.

Input

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.

- $1 \leq n \leq 2 \times 10^5$
- $1 \leq m \leq 2 \times 10^5$

- $1 \leq \ell \leq 10^9$
- $1 \leq y < x \leq 10^6$
- $0 \leq s_i < t_i \leq \ell$
- $0 \leq p_i \leq \ell$

Output

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 $\frac{|a-b|}{\max(1,|b|)} \leq 10^{-6}$.

Examples

standard input	standard output
3 3 10 4 1 0 5 2 4 7 9 3 8 5	6.25 1.5 5
1 3 100 100 1 1 2 0 1 2	100 98.01 98

Note

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 1, the total time spent is 6.25 minutes, which is the minimum possible.