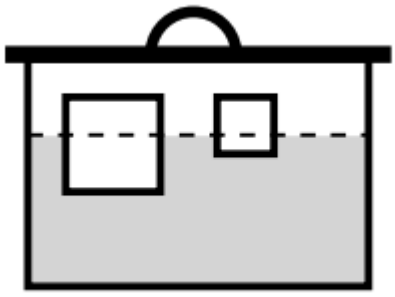
# Baltic OI '03 P1 - Barrel

**Time limit:** 2.0s **Memory limit:** 64M

### Baltic Olympiad in Informatics: 2003 Day 1, Problem 1

Some amount of water is poured into a barrel, then a number of cubes of different size and density are put into water. Finally, a lid is put onto the barrel and pushed down until it touches the edges of the barrel.



Write a program to compute the resulting water level in the barrel.

It can be assumed that:

- the density of water is $1.0$,
- the influence of air can be neglected,
- the cubes fit completely into the barrel,
- the cubes do not rotate and do not touch each other.

## Input Specification

The first line contains three real numbers - the bottom area of the barrel $S$ $(0 < S \leq 1\,000)$, the height of the barrel $H$ $(0 < H \leq 1\,000)$, and the volume of the water $V$ $(0 < V \leq S \cdot H)$. The next line contains the number of cubes $N$ $(0 < N \leq 1\,000)$. It is followed by $N$ lines, each containing two real numbers describing the cube - the length of a side of the cube $L$ $(0 < L \leq 1\,000)$, and the density of the cube $D$ $(0 < D \leq 10)$.

## Output Specification

The first and only line of the output must contain one real number - the resulting water level. The output must not differ from the correct value by more than $10^{-4}$.

## Sample Input

```
100 10 500
1
1 0.5
```

## Sample Output

```
5.0050
```