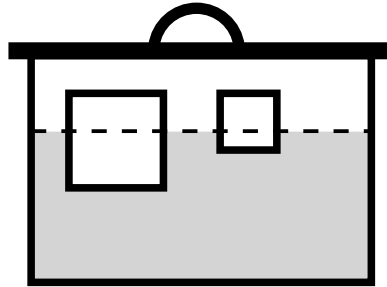


## Barrel

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.** The first line of the input file `BARREL.IN` contains three real numbers — the bottom area of the barrel,  $S$  ( $0 < S \leq 1000$ ), the height of the barrel,  $H$  ( $0 < H \leq 1000$ ), and the volume of water,  $V$  ( $0 < V \leq S \cdot H$ ). The next line contains the number of cubes,  $N$  ( $0 < N \leq 1000$ ). It is followed by  $N$  lines, each containing two real numbers describing a cube — the length of a side of the cube,  $L$  ( $0 < L \leq 1000$ ), and the density of the cube,  $D$  ( $0 < D \leq 10$ ).

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

Sample.	BARREL.IN	BARREL.OUT
	100 10 500	5.0050
	1	
	1 0.5	