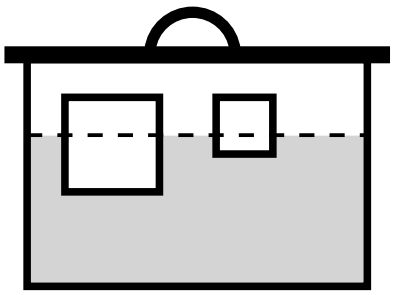
Barrel

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 1 1 0.5	5.0050