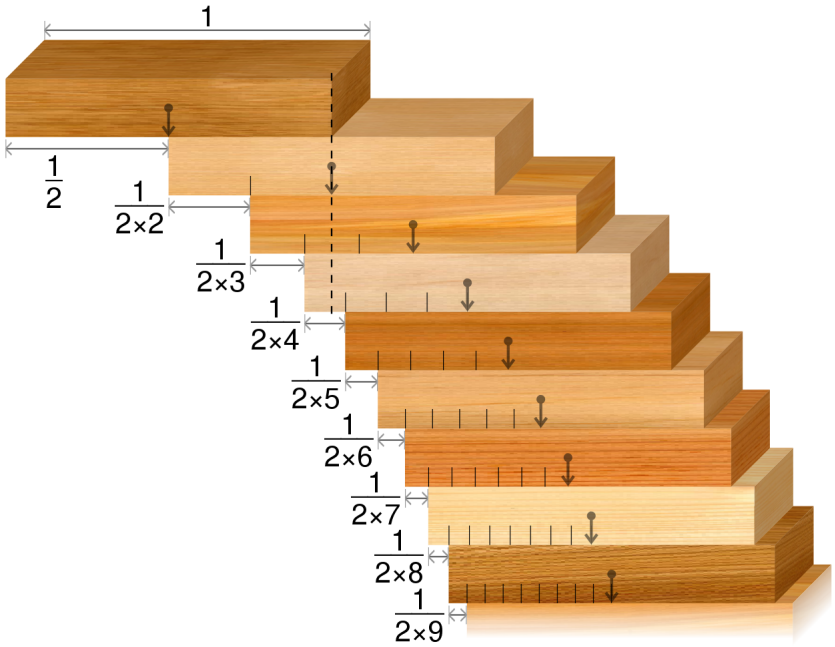
# A. King of Blocks (Tower)

## Problem Statement

There's a famous problem about stacking blocks in physics: "there are $n$ identical blocks of length 1, how long can the stack be extended from the base if we stack the blocks one by one?"

In fact, the answer for this problem is exactly $\sum_{i=1}^{n} \frac{1}{2i}$, so if there's enough blocks, the stack can be extended without limit. Refer to the diagram below.




(Wikipedia, Uploaded by cmglee, Anonimski, Block stacking problem.svg, under CC BY-SA 4.0 License)

The King of Blocks thinks that this problem is a joke, so he summoned some blocks of equal length but not necessarily of equal weight, the King of Blocks wants to know how long the stack can extend in this case.

Formally, there are $n$ uniform rectangular blocks, the $i$-th of which has weight $w_i$ and length $L$. Each block has to be either on top of another block or the table, and each block and the table can have at most one block stacked on top. You can stack blocks in an arbitrary order. Each block must be placed such that the long side is perpendicular to the edge of the table. The table is rectangular with infinite length and width.

If the center of mass of the top $x$ blocks is not above the $x+1$-th block for some $x$, these blocks will topple and fall over. In other terms, if we let the coordinate of the left side of the $x+1$-th block be 0, and the $j$-th block is centered at $p'_j$ and has weight $w'_j$, they must satisfy

$$0 \leq \frac{\sum_{j=1}^{x} p'_j w'_j}{\sum_{j=1}^{x} w'_j} \leq L$$

Of course, the center of mass of all the blocks has to be on the table. Suppose the left side of the table has

coordinate $0$. How long can the stack be extended to the left?

Your answer will be considered correct if the absolute or relative error is less than $10^{-9}$.

## Input Format

| |
|---|
| $n\ L$<br>$w_1\ w_2\ \ldots\ w_n$ |

- $n$ denotes the number of blocks.
- $L$ denotes the length of each block.
- $w_i$ is the weight of the $i$th block.

## Output Format

| |
|---|
| $ans$ |

- $ans$ denotes the maximum length that the stack can be extended from the edge of the table. Your answer will be considered correct if the absolute or relative error is less than $10^{-9}$.

## Constraints

- $1 \leq N \leq 3 \times 10^5$
- $1 \leq L \leq 10^9$
- $1 \leq w_i \leq 10^9$
- All inputs are integers

## Example

| Sample Input | Sample Output |
|---|---|
| 1 1<br>1 | 0.5 |
| 3 12<br>1 2 3 | 13 |

## Scoring

There are $3$ subtasks in this problem. The score and additional constraints of each subtask are as follows:

| Subtask | Score | Additional Constraints |
|---|---|---|
| 1 | 25 | $n \leq 9$ |
| 2 | 25 | $w_i = 1, \forall 1 \leq i \leq n$ |
| 3 | 50 | No other constraints |