Problem D
Draw Your Deck
Time Limit: 5 Seconds, Memory Limit: 2G

You are playing a single-player game with a deck of cards. The deck has N cards, each with an integer between 0 and K written on it. You shuffle the deck and draw a card, which forms your starting hand. You then play the game by repeatedly choosing and discarding a card from your hand. Each time you do so, you draw as many cards from the top of the deck into your hand as the integer written on the card you just discarded. (If there are not enough cards left in the deck, you draw them all.) You win if you draw all of the cards from the deck and you lose if you run out of cards in your hand when there are still cards left in the deck. Given the contents of the deck, and assuming that all possible shuffles of the deck are equally likely and that you play optimally, what is the probability you win the game?

Input

The first line of input contains two space-separated integers N and K, where N $(1 \leq N \leq 1\,500)$ is the number of cards in the deck and K $(0 \leq K \leq 3)$ is the largest integer written on any of the cards.

The second line contains $K+1$ space-separated integers a_i $(0 \leq a_i \leq N)$, starting at $i = 0$: the number of cards in the deck with the integer i written on them. It is guaranteed that $a_K > 0$ and that the sum of all of the a_i is N.

Output

Print a real number: the probability that you win if you play optimally. Your answer will be accepted if it differs from the judge solution by an absolute error of at most 10^{-6}.

Sample Input 1	Sample Output 1
4 2 2 0 2	0.3333333333333333

Sample Input 2	Sample Output 2
5 1 3 2	0.0

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