Gift Box Lottery

Problem ID: giftboxlottery

Time limit: 1 second

Bob takes part in a traditional gift box lottery game held every year. In this game, there are an infinite number of identical gift boxes with the same content inside. Each box contains N gifts, labeled from 1 to N, have value A_1,A_2,...,A_N respectively, the players know these values ahead of time. A player must start out with a random gift box, pulling gifts from it randomly, one gift at a time. All gifts in the box have an equal chance to be pulled. The gift with label 1 is special, after you pull this gift, you gain the right to skip remaining gifts in this box and move on to the next gift box. This right can be exercised whenever, as long as you are still pulling from the same box. Unless using the above special right, you must pull until the current box is empty before moving to the next box. Pulling special gift from the next box will grant you special right for the new box.

If Bob plays this game optimally, what would be the best value per pull he can get?

Input

The first line of input contains one integer N ($1 \leq N < 20$), the number of gifts per gift box.
The following line contains N real numbers A_i ($0 \leq A_i \leq 10^6$), the value of each gifts.

Output

Output a single number, the best value per pull Bob can achieve if he plays optimally. The answer is considered correct if the precision error is less than 10^{-5}.

Explaination

In the first sample test case, no matter which gift we pull first from the box, we still need to pick the other one before moving to the next box, so the result is $1/2 = 0.5$.
In the second sample test case, in case we:

- Pull gift 1 first, move on to next box immediately, result in 1 value from 1 pull.
- Pull gift 2 first, we pull again then move on to next box, result in 1 value from 2 pulls.

Combined, the result is $2/3$.

Sample Input 1	Sample Output 1
2 0 1	0.5

Sample Input 2	Sample Output 2
2 1 0	0.6666666667

Sample Input 3	Sample Output 3
3 2 1 0	1.25