Expected Cycle Sums

We are given a sequence S of N distinct integers. Denote by S[i] as ith element of S. Hardik picks up a random permutation of S , breaks it into product of disjoint cycles & looks at cycle containing S[i].He notes down the sum of all element of this cycle. Call the expected value of this sum as cycleSum[i]. Your task is to find the minimum value amongst all cycleSums.

Assume all permutations of these N numbers are equally likely.

Input Format :

First line contains an integer T which denotes the number of test cases. Then follow description of T test scenarios. Each test scenario takes 2 lines. First line contains a single integer N, the size of S. Then follows second line containing N elements of S.

Output Format :

Print answer for each test case , rounded to exactly one decimal place , in one line each.

Sample Input :
2
1
1
2
1 2

Sample Output:
1.0
2.0

Note: Notion of cycles for any sequence is defined by using index in the sequence (1-N).

Explaination for sample output :

In first case only possible permutation is (1) So answer is trivially 1.0

In second case possible permutations are (1)(2) & (12). As both of these are equally likely, cycleSum[1] = 1/2 * 1 + 1/2 * (1+2) = 2.0

And cycleSum[2] = 1/2 * 2 + 1/2 * (1+2) = 2.5. Smaller of these is 2.0 , hence the answer.

Constraints :

1<=T<=500
1<=N<=5000
All elements of S are distinct integers in range 0 to 10^5