Colorful Candies

You have a huge jar of magic candies of n different colors. The colors are numbered from 1 to n, and initially the i-th color has c_i candies.

While the candies in the jar are not all of the same color, you perform the following operation:

- Choose two candies of **different** colors, uniformly at random among all such pairs of candies.
- Then, choose one of these two candies, uniformly at random, and change its color to the color of the other candy.

Find the expected number of operations performed until all the candies in the jar have the same color.

Input

Each test contains multiple test cases. The first line contains the number of test cases τ ($1 \le \tau \le 300$). The description of the test cases follows.

The first line of each test case contains an integer n ($1 \le n \le 300$) – the number of colors.

The second line contains n integers $c_1, c_2, \ldots, c_n$ ($1 \le c_i \le 10^9$) – the number of candies of each color.

It is guaranteed that the sum of n over all test cases does not exceed 300.

Output

For each test case, print the answer as follows:

- If the expected number of operations is infinite, print -1.
- Otherwise, let $M = 10^9 + 7$. It can be shown that in this case, the expected number of operations can be expressed as an irreducible fraction $\frac{p}{q}$, where p and q are integers and $q \not\equiv 0 \pmod{M}$. Output the integer equal to $p \cdot q^{-1} \bmod M$. In other words, output such an integer x that $0 \le x < M$ and $x \cdot q \equiv p \pmod{M}$.

Sample Input 1	Sample Output 1
3 2 1 1 2 2 1 1 5	1 2 0

Sample Explanation

In the first test case, there are two candies of different colors. After one operation, both candies have the same color, so the answer is 1.

In the second test case, there are two candies of color 1 and one candy of color 2. In the first operation, the chosen pair consists of the candy of color 2 and one candy of color 1:

- With probability $\frac{1}{2}$, the candy of color 2 changes to color 1, and all candies have the same color.
- With probability $\frac{1}{2}$, the candy of color 1 changes to color 2. Now there is one candy of color 1 and two candies of color 2, which is the same situation as the beginning with the colors swapped.

Hence, the number of operations follows a geometric distribution with success probability $\frac{1}{2}$. Consequently, the expected number of operations is 2.

In the third test case, all candies already have the same color, so no operation is performed.