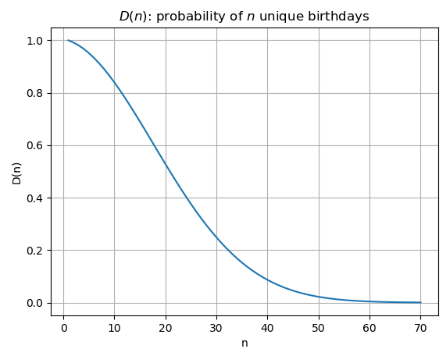
Problem G
Birthday Paradox

The Birthday Paradox is the name given to the surprising fact that if there are just 23 people in a group, there is a greater than 50% chance that a pair of them share the same birthday. The underlying assumptions for this are that all birthdays are equally likely (which isn't quite true), the year has exactly 365 days (which also isn't true), and the people in the group are uniformly randomly selected (which is a somewhat strange premise). For this problem, we'll accept these assumptions.

Consider what we might observe if we randomly select groups of $P = 10$ people. Once we have chosen a group, we break them up into subgroups based on shared birthdays. Among *many* other possibilities, we might observe the following distributions of shared birthdays:



The probability of n unique birthdays among n people.

- all 10 have different birthdays, or
- all 10 have the same birthday, or
- 3 people have the same birthday, 2 other people have the same birthday (on a different day), and the remaining 5 all have different birthdays.

Of course, these distributions have different probabilities of occurring.

Your job is to calculate this probability for a given distribution of people sharing birthdays. That is, if there are P people in a group, how probable is the given distribution of shared birthdays (among all possible distributions for P people chosen uniformly at random)?

Input

The first line gives a number n where $1 \leq n \leq 365$. The second line contain integers c_1 through c_n, where $1 \leq c_i \leq 100$ for all c_i. The value c_i represents the number of people who share a certain birthday (and whose birthday is distinct from the birthdays of everyone else in the group).

Output

Compute the probability b of observing a group of people with the given distribution of shared birthdays. Since b may be quite small, output instead $\log_{10}(b)$. Your submission's answer is considered correct if it has an absolute or relative error of at most 10^{-6} from the judge's answer.

Explanations

The first sample case shows $P = 2$ people with distinct birthdays. The probability of this occurring is $b = 364/365 \approx 0.9972602740$, and $\log_{10}(b) \approx -0.001191480807419$.

The second sample case represents the third example in the list given earlier with $P = 10$ people. In this case, the probability is $b \approx 0.0000489086$, and $\log_{10}(b) \approx -4.310614508857128$.

Sample Input 1	Sample Output 1
2 1 1	-0.001191480807419

Sample Input 2	Sample Output 2
7 1 1 2 1 3 1 1	-4.310614508857128