Problem D. Money Game

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Putata and Budada are organizing a game with n players. Each player has some deposit, which is a real number. Player i has a_i deposits in the beginning. During each round of the game, the followings happen **in order**:

- Player 1 gives player 2 half of player 1's deposit.
- Player 2 gives player 3 half of player 2's deposit.
- ...
- Player $n-1$ gives player n half of player $n-1$'s deposit.
- Player n gives player 1 half of player n's deposit.

The n players played this game for exactly 2022^{1204} rounds. Putata wonders how much deposit each player has after the game. Please write a program to answer his question.

Input

The first line contains an integer n ($2 \le n \le 10^5$), denoting the number of players.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^6$), denoting the deposit player i has in the beginning.

Output

Output one line with n real numbers, denoting the deposit each player has after they played this game.

Your answer will be considered correct if its absolute or relative error does not exceed 10^{-6}. Formally, let your answer be a, and the jury's answer be b. Your answer will be considered correct if $\frac{|a-b|}{\max(1,|b|)} \le 10^{-6}$.

Example

standard input	standard output
2 4 2	4.00 2.00

Note

During one round, the deposit they have changed as follows: $[4, 2] \to [2, 4] \to [4, 2]$. Their deposit does not change after this round, so the answer is the same as the input.