

## Problem D. Two Pirates - 2

Input file: *standard input*  
 Output file: *standard output*  
 Time limit: 2 seconds  
 Memory limit: 512 menibytes

Two pirates are dividing looted treasures. There are  $n$  treasures, the  $i$ -th of which costs  $a_i$  gold. They move in rotation, each turn a pirate picks one of the remaining treasures. The thing is, the second pirate is drunk, so he doesn't make optimal picks and each turn just picks a random available treasure, uniformly. The first pirate knows that and always makes the optimal picks.

Find the expected costs of treasures picked by both pirates.

### Input

The first line contains an integer  $n$  ( $1 \leq n \leq 5000$ ) — the number of treasures.

The second line contains  $n$  integers  $a_i$  ( $1 \leq a_i \leq 10^9$ ) — the costs of the treasures.

### Output

Output two floating point numbers: the expected costs of treasures picked by the first and the second pirates.

Absolute or relative error of the numbers shouldn't exceed  $10^{-9}$ .

### Examples

standard input	standard output
2 1 3	3.0000000000000000 1.0000000000000000
3 2 1 4	5.5000000000000000 1.5000000000000000