Teaser Problems

Problem 1: The Trip

A group of students is going on a trip. They agree to share expenses equally, but since each student will be paying for different items on the trip, it is impractical to share each expense as it occurs. Instead, they plan to exchange money at the end in order to equalize the costs, to within one cent. Your job is to compute, from a list of expenses, the minimum amount of money that must change hands in order to equalize (within one cent) all the students' costs.

Input: The input contains information for several trips. Each trip consists of a line containing a positive integer n denoting the number of students on the trip. This is followed by n lines of input, each containing the amount spent by a student in dollars and cents. There are no more than 1000 students and no student spent more than \$10,000.00. A single line containing 0 follows the information for the last trip.

Output: For each trip, output a line stating the total amount of money, in dollars and cents, that must be exchanged to equalize the students' costs.

Sample Input	Sample Output
3	\$10.00
10.00	\$11.99
20.00	
30.00	
4	
15.00	
15.01	
3.00	
3.01	
0	

Problem 2: Zeroes!

Recall, for a positive integer n, that $n!$ ("n factorial") is defined to be the product of all integers between 1 and n, inclusive: for instance, $5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$. As a special case, $0! = 1$ by definition. The factorial is not defined for negative integer or non-integer inputs. (Note for pedants: if you think it is, you're thinking about the *Gamma function*.)

Like every positive integer, every factorial ends in some number of zeroes when written in decimal notation. For instance, $5! = 120$ ends in one zero, while $12! = 479,001,600$ ends in two zeroes. Your job, given a non-negative integer m, is to find the *smallest* non-negative integer n such that $n!$ ends in exactly m zeroes.

Input: The first line will contain a single integer k ($0 < k < 100$), the number of test cases. Each of the K subsequent lines contains a single integer m ($0 \leq m < 100,000,000$), the target number of zeroes.

Output: For each input, output on a separate line the smallest integer n such that $n!$ ends in exactly m zeroes. If there is no such n, output "no such factorial" instead.

Sample Input	Sample Output
3	5
1	15
3	no such factorial
11	