

3445 Mean Median

The mean of a list of N real numbers X_i is defined as:

$$\frac{1}{N} \sum_{i=1}^N X_i$$

The median of a sorted list of N real numbers X_i is defined as:

- If N is odd: $X_{(N+1)/2}$
- If N is even: $(X_{N/2} + X_{(N/2)+1})/2$

In a recently published paper, H. Schultz and R. Shiflett have discovered that given a list of real numbers, if you add a number to the list such that the mean of the new list is equal to the median of the previous list, and then repeat the process, eventually the mean and median become and remain the same. They call these M&m *sequences* and the final value the *stable* value. The *length* of the sequence is defined as the length of the sequence after the first calculated stable value has been added.

For example: given the initial list [5 17 23], the list with the first calculated stable value is [5 17 23 23 32 38 23] with a length of 7.

Your team's job is to develop a program to investigate these sequences. The program will be given a series of cases that consist of an upper limit on sequence length and an initial list of real numbers. For each case, the program must determine the mean and median values of the initial list. If they are not the same, find the real number that when added to the list will make the mean of the extended list equal to the previously found median. Add that number to the list and repeat unless adding another number would make the length of the list exceed the limit. If the mean and median are the same, add the stable value to the list and report the length of the extended list.

For this program, use floating point numbers and consider a and b to be equal if $|a - b| < 10^{-8}$.

Input

Input to your program will be a series of test cases, one test case per line. Each line will contain a series of numbers separated from each other by white space. The first number is the length limit as an integer l , $0 < l \leq 100$, and the remaining numbers are the elements of the initial list as real numbers X_i , $0 \leq X_i \leq 100$. The line will be at most 80 characters in length.

Output

For each case, if the length of the M&m sequence does not exceed the limit, your program is to print the length of the M&m sequence starting in the first column. If it does exceed the limit, print '>l' starting in the first column, where l is the limit for the test case.

Sample Input

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10 5.0 17 23
14 6 46 78
15 78 6 46
100 5 5.5 33.9
5 17.4 17.4
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Sample Output

7
>14
15
73
3