Problem I

Expected Value of a Permutation

You have an array of N integers $A = [A_1, A_2, \cdots, A_N]$. Summing all integers in A is boring, so you decided to take it to the next level. You have a permutation P of 1 to N generated randomly. Each permutation from 1 to N has an equal probability to be chosen as P.

You also want to define arrays $X_0, X_1, X_2, ..., X_N$ and an integer Y as follows:

- $X_0 = A$
- X_i for $1 \leq i \leq N$ is defined as X_{i-1} but all integers whose incides are multiples of i are changed to 0.
- $Y = sum(X_1) + sum(X_2) + \cdots + sum(X_N)$, where $sum(X_i)$ is the sum of all integers in the array X_i.

For example, if $A = [4, 1, 2, 3, 4]$ and $P = [3, 2, 4, 1, 5]$, then:

- $X_0 = [4, 1, 2, 3, 4]$
- $X_1 = [4, 1, 0, 3, 4] \leftarrow P_1 = 3$, so, the 3^{rd} element of X_1 is changed to 0.
- $X_2 = [4, 0, 0, 0, 4] \leftarrow P_2 = 2$, so, the 2^{nd} and 4^{th} elements of X_2 are changed to 0.
- $X_3 = [4, 0, 0, 0, 4] \leftarrow P_3 = 4$, so, the 4^{th} element of X_3 is changed to 0.
- $X_4 = [0, 0, 0, 0, 0] \leftarrow P_4 = 1$, so, all elements of X_4 are changed to 0.
- $X_5 = [0, 0, 0, 0, 0] \leftarrow P_5 = 5$, so, the 5^{th} element of X_5 is changed to 0.

Therefore, $Y = 12 + 8 + 8 + 0 + 0 = 28$ in this case.

Since P is generated randomly, you are wondering the expected value of Y. Let $\frac{C}{D}$ be the expected value of Y where C and D are relatively prime non-negative integers. Print the value of $(C \times D^{-1}) \mod 1000000007$. In other words, you must print the value of the unique integer K $(0 \leq K < 1000000007)$ satisfying $C \equiv DK \pmod{1000000007}$.

Input

Input begins with an integer N $(1 \leq N \leq 100000)$ representing the number of integers in A. The second line contains N integers: A_i $(0 \leq A_i \leq 10^9)$ representing the array A.

Output

Output in a line the expected value of Y using the format specified in the problem description.

Sample Input

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5
4 1 2 3 4
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Sample Output

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500000020
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Explanation for the sample input/output

There are $5! = 120$ possible permutations for the value of P.

- When the value of $P = [3, 2, 4, 1, 5]$, the value of $Y = 28$ as described in the problem statement above.
- When the value of $P = [2, 1, 3, 4, 5]$, the value of $Y = 10$.
- ...

The sum of Y for all possible values of P is 1980. Therefore, the expected value of Y is $\frac{1980}{120} = \frac{33}{2}$. Since $33 \equiv 2 \times 500000020 \pmod{1000000007}$, you must print 500000020 for this sample case.