

Problem I. Impossible Task

Input file: `stdin`
Output file: `stdout`
Time limit: 1 second

Spring break is already over. Even though feeling that a one week break is far from enough (as usual), you know it is time to resume working. Suddenly, you realize that there is a midterm in Number Theory coming up next week. As skimming through all the practice questions given by your professor (which you should have done over break), you realize that there is one type of question where you have no idea how to solve. The question is of the form: Given a number n , calculate the sum of all divisors of n except n itself. Even worse, since you never went to any lecture this semester (how surprising), you have no clue where to begin. However, lucky for you, the professor promised that the given n on the exam would belong to a certain set of number. Thus, as long as you can memorize all the possible results, you will be good. Since the size of the given set is rather large, you want to write a program to compute all the answers before starting memorizing.

Input

The first line contains an integer $q \leq 10^6$ which denotes the number of possible n will be given on the exam. The second line contains a_1 , the first question asked, with $1 \leq a_1 \leq 10^6$. The rest of questions will be generated by the following rule:

$$a_{i+1} = (a_i^2 \bmod 999983) + 1 \qquad \forall i \in \{1 \dots q - 1\}$$

Output

The output has one line with a single integer, which is the sum of answers to questions with $n = a_i$ for all $1 \leq i \leq q$.

Examples

stdin	stdout
3 2	18

Notes

In the sample test case, question $n = 2$ has answer 1; question $n = 5$ has answer 1; question 26 has answer 16. Outputted answer should be $1 + 1 + 16 = 18$.