Diophantine equation

Sometimes solving a Diophantine equation is very hard. But, for example, the equation $\mathbf{a}+\mathbf{b}^2+\mathbf{c}^3+\mathbf{d}^4=\mathbf{n}$ has a trivial solution for every value of **n**. Your task is to determine the number of solutions of the equation for each given **n**, assuming that in the equation all the values **a**, **b**, **c** and **d** are non-negative integers.

Input

The first line of input contains an integer **T**, representing the number of test cases (**T**<20000).

The following **T** lines contain one non-negative integer **n** each, where $\mathbf{n} < 10^9$.

Output

Output **T** lines, each containing the number of solutions of the respective equation for **n**.

Example

Input:
5
0
1
10
100
1000

Output:
1
4
19
148
1476