

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 \mathbf{n} . Your task is to determine the number of solutions of the equation for each given \mathbf{n} , assuming that in the equation all the values \mathbf{a} , \mathbf{b} , \mathbf{c} and \mathbf{d} are non-negative integers.

Input

The first line of input contains an integer \mathbf{T} , representing the number of test cases ($\mathbf{T} < 20000$).

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

Output

Output \mathbf{T} lines, each containing the number of solutions of the respective equation for \mathbf{n} .

Example

Input:

```
5
0
1
10
100
1000
```

Output:

```
1
4
19
148
1476
```