Project Euler #251: Cardano Triplets

This problem is a programming version of Problem 251 from projecteuler.net

A triplet of positive integers (a, b, c) is called a Cardano Triplet if it satisfies the condition:

$$\sqrt[3]{a + b\sqrt{c}} + \sqrt[3]{a - b\sqrt{c}} = 1$$

For example, $(2, 1, 5)$ is a Cardano Triplet.

There exist 149 Cardano Triplets for which $a + b + c \leq 1000$.

Find how many Cardano Triplets exist such that $a + b + c \leq n$.

Input Format

The first line of each test file contains a single integer q, which is the number of queries. q lines follow, each containing the corresponding n.

Constraints

- $1 \leq q \leq 10$
- $8 \leq n \leq 5 \times 10^8$

OR

- $1 \leq q \leq 2$
- $8 \leq n \leq 5 \times 10^9$

OR

- $q = 1$
- $8 \leq n \leq 2 \times 10^{10}$

Output Format

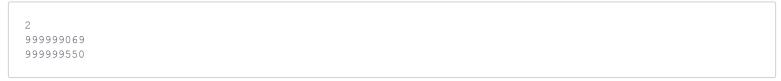Print exactly q lines with the answer to the corresponding query on each one.

Sample Input 0

```
2
8
1000
```

Sample Output 0

```
1
149
```

Explanation 0

$(2, 1, 5)$ is the only triplet with the sum ≤ 8.

Sample Input 1

```
2
999999069
999999550
```

Sample Output 1

```
172332336
172332416
```