

Project Euler #46: Goldbach's other conjecture

This problem is a programming version of [Problem 46](#) from [projecteuler.net](#)

It was proposed by Christian Goldbach that every odd composite number can be written as the sum of a prime and twice a square.

$$\begin{aligned}9 &= 7 + 2 \times 1^2 \\15 &= 7 + 2 \times 2^2 \\21 &= 3 + 2 \times 3^2 \\25 &= 7 + 2 \times 3^2 \\27 &= 19 + 2 \times 2^2 \\33 &= 31 + 2 \times 1^2\end{aligned}$$

It turns out that the conjecture was false as you'll discover some values can't be represented as a sum of prime and twice a square.

You are given N , print the number of ways N can be represented as a sum of prime and twice a square.

Example 15 can be represented in two ways as $15 = 7 + 2 \times 2^2$ and $15 = 13 + 2 \times 1^2$

Input Format

The first line contains an integer T , i.e., number of test cases.

Next T lines will contain an integer N .

Output Format

Print the values corresponding to each test case.

Constraints

$$1 \leq T \leq 100$$

$$9 \leq N < 5 \times 10^5$$

$$N \in \{\text{odd composite number}\}$$

Sample Input

```
2
9
15
```

Sample Output

```
1
2
```