Project Euler #135: Same differences

HackerRank

This problem is a programming version of Problem 135 from projecteuler.net

Given the positive integers, x, y, and z, are consecutive terms of an arithmetic progression, the least value of the positive integer, n, for which the equation, $x^2 - y^2 - z^2 = n$, has exactly two solutions is $n = 27$:

$$34^2 - 27^2 - 20^2 = 12^2 - 9^2 - 6^2 = 27$$

It turns out that $n = 1155$ is the least value which has exactly 10 solutions.

Let $S(n)$ be the number of solutions for this value of n. For example, $S(27) = 2$ and $S(1155) = 10$.

Given n, what is $S(n)$?

Input Format

The first line of input contains T, the number of test cases.

Each test case consists of one line containing a single integer, n.

Constraints

In the first 10 test cases (worth 50% of the total points):
$1 \leq T \leq 1000$
$1 \leq n \leq 5000$

In the next 5 test cases (worth 50% of the total points):
$1 \leq T \leq 100000$
$1 \leq n \leq 8000000$

Output Format

For each test case, output one line containing a single integer, the answer for that test case ($S(n)$).

Sample Input

```
2
27
1155
```

Sample Output

```
2
10
```