Project Euler #136: Singleton difference

This problem is a programming version of Problem 136 from projecteuler.net

The positive integers, x, y, and z, are consecutive terms of an arithmetic progression. Given that n is a positive integer, the equation, $x^2 - y^2 - z^2 = n$, has exactly one solution when $n = 20$:

$$13^2 - 10^2 - 7^2 = 20$$

In fact there are twenty-five values of n below one hundred for which the equation has a unique solution.

How many values of n in the range $[L, R]$ have exactly one solution?

Input Format

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

Each test case consists of one line containing two integers, L and R.

Constraints

In the first few test cases (worth 50% of the total points):
$11 \leq T \leq 100000$
$1 \leq L \leq R \leq 6000000$

In the last few test cases (worth 50% of the total points):
$1 \leq T \leq 10$
$1 \leq L \leq R \leq 10^{12}$
$R - L \leq 1000000$

Output Format

For each test case, output one line containing a single integer, the answer for that test case.

Sample Input

```
1
1 99
```

Sample Output

```
25
```