

# Project Euler #141: Investigating progressive numbers, $n$ , which are also square.

This problem is a programming version of [Problem 141](#) from [projecteuler.net](#)

A positive integer,  $n$ , is divided by  $d$  and the quotient and remainder are  $q$  and  $r$  respectively. In addition  $d$ ,  $q$ , and  $r$  are consecutive positive integer terms in a geometric sequence, but not necessarily in that order.

For example,  $58$  divided by  $6$  has quotient  $9$  and remainder  $4$ . It can also be seen that  $4$ ,  $6$ ,  $9$  are consecutive terms in a geometric sequence (common ratio  $3/2$ ). We will call such numbers,  $n$ , progressive.

Some progressive numbers, such as  $9$  and  $10404 = 102^2$ , happen to also be perfect squares. The sum of all progressive perfect squares below one hundred thousand is  $124657$ .

Some progressive numbers, such as  $730$  and  $4097$ , are very close to becoming perfect squares; in fact, their distance from the nearest perfect square is one.

Given  $K$  and  $L$ , find the sum of all progressive numbers below  $L$  that are at most  $K$  away from a perfect square.

## Input Format

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

Each test case consists of a single line containing two integers separated by a single space:  $K$  and  $L$ .

## Constraints

$$0 \leq K \leq 10^6$$

$$1 \leq L \leq 10^{11}$$

For test cases worth 50% of the total points:

$$1 \leq T \leq 40$$

For test cases worth 100% of the total points:

$$1 \leq T \leq 2500$$

## Output Format

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

## Sample Input

```
2
0 100000
1 100000
```

## Sample Output

```
124657
```

**Explanation**

The first test case corresponds to the example given in the problem statement, so the answer is **124657**.