

Project Euler #125: Palindromic sums



This problem is a programming version of [Problem 125](#) from [projecteuler.net](#)

A *palindromic number* has the same digits from left to right as it does from right to left.

The palindromic number **595** is interesting because it can be written as the sum of consecutive squares:
 $6^2 + 7^2 + 8^2 + 9^2 + 10^2 + 11^2 + 12^2$.

The palindromic number **696** is also nice because it can be written as $10^2 + 12^2 + 14^2 + 16^2$, where the bases form an [arithmetic progression](#) with common difference **2**.

There are exactly eleven palindromes below one-thousand that can be written as consecutive square sums, and the sum of these palindromes is **4164**. Note that $1 = 0^2 + 1^2$ has not been included as this problem is concerned with the squares of positive integers. Also, there has to be at least two terms in the sum.

Given N and d , find the sum of all the numbers less than N that are both palindromic and can be written as the sum of squares whose bases form an arithmetic progression with common difference d .

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 N and d , separated by a space.

Constraints

$$1 \leq T \leq 20$$

$$1 \leq N \leq 10^9$$

$$1 \leq d \leq 10^9$$

Output Format

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

Sample Input

```
2
1000 1
1000 2
```

Sample Output

```
4164
3795
```

Explanation

The first test case corresponds to the example given in the problem statement.

In the second test case, $d = 2$, and there are **6** such numbers less than **1000**. Two such numbers are:

$$696 = 10^2 + 12^2 + 14^2 + 16^2$$

$$969 = 1^2 + 3^2 + 5^2 + 7^2 + 9^2 + 11^2 + 13^2 + 15^2 + 17^2$$

