Project Euler #125: Palindromic sums

Problem Statement

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

$1 \le T \le 20$
$1 \le N \le 10^9$
$1 \le d \le 10^9$

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:

$696 = 10^2 + 12^2 + 14^2 + 16^2$
$969 = 1^2 + 3^2 + 5^2 + 7^2 + 9^2 + 11^2 + 13^2 + 15^2 + 17^2$