

# Palindromic-Type Squared Expressions with Palindromic and Non-Palindromic Sums - I

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## Abstract

*In the previous papers [9, 13, 14, 15], the author worked with **palindromic-type expressions**. These expressions are by use of operations of addition and multiplications. When the operations are removed, we get normal even order palindromes. The previous works are limited to particular cases including patterns. The final sums are either palindromic or non-palindromic. The aim of this paper is to write **palindromic-type squared expressions** when final sums are **palindromes** or **non-palindromes**. In the previous works [14, 15] we have written numbers maximum up to 7 digits for final sums with multiple choices. This work is up to 21 digits final sums.*

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## 1 Introduction

A palindromic number is the number that remains the same when its digits are reversed, for example, 121, 3333, 161161, etc. In [6, 7], author worked on palindromic patterns and wrote them in terms of single digit " $a$ ". We shall define **palindromic-type expressions**, i.e., the numbers are not palindromes but appears like palindromes. They are separated by operations of

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additions and/or multiplications, for example,

- $1343 \times 3421$
- $1225 \times 5221$
- $16 + 61$
- $1825 + 5281$ , etc.

When we remove the operation sign, they becomes palindromes. These types of numbers we call as **palindromic-type expressions**. Some studies in this direction can be seen in [4]. Let us separate these numbers in two categories:

- **Type 1:**

$$\begin{aligned} 1596 \times 6951 &= 2793 \times 3972 \\ 616248 \times 842616 &= 645408 \times 804546. \end{aligned}$$

- **Type 2:**

$$\begin{aligned} 234 \times 111 + 111 \times 432 &= 25974 + 47952 := 73926. \\ 10011 \times 11 + 11 \times 11001 &= 110121 + 121011 := 231132. \end{aligned}$$

The difference is that the first type is only with **multiplication**, and second type is with **addition** and **multiplication**. The work on first type can be seen in author's work [10, 12]. This work is concentrated only on **Type 2**, i.e., **palindromic-type expressions** with **addition** and **multiplication**.

Let's analyse both the expressions given in Type 2. In the first expressions the final sum is non-palindrome, in the second expression the final sum is palindrome. In this case the **palindromic-type expressions** are

$$\begin{aligned} 234 \times 111 + 111 \times 432 &= 25974 + 47952 \\ 10011 \times 11 + 11 \times 11001 &= 110121 + 121011. \end{aligned}$$

Without operations, in each case, we get different palindromes:

- (i)  $234111111432$  and  $2597447952$ ;
- (ii)  $1001111111001$  and  $110121121011$ .

Since these becomes equal by using operations, that's why we call them as **palindromic-type expressions**. For simplicity, these can be written as

$$ab \times cd + dc \times ba = ef + fe := G, \quad (1.1)$$

where

$$\begin{aligned} ab &: \text{ Palindrome or Non-Palindrome;} \\ cd &: \text{ Palindrome or Non-Palindrome;} \\ G &: \text{ Palindrome or Non-Palindrome.} \end{aligned}$$

## 1.1 Particular Cases

(i) In case of **squared expressions**, we have  $ab = cd$  and  $dc = ba$

$$(ab)^2 + (ba)^2 = ef + fa := G \quad (1.2)$$

where " $G$ " may be palindrome or non-palindrome.

(ii)  $ab, ba, cd, dc, ef$  and  $fa$  all palindromes, where the total sums " $G$ " may be palindrome or non-palindrome.

(iii)  $ab, ba, cd$  and  $dc$  are of equal lengths, where " $G$ " may be palindrome or non-palindrome.

This paper brings the palindromic-type squared expressions as specified in particular case (i), where the sum " $G$ " is palindrome and non-palindromes. For study in this direction in different situations refer author's work [6, 7, 8, 9, 14, 15]. For summary of author's work on recreation of numbers refer [11]. From historical point of view refer [1, 3, 5]. Before proceeding further, below are some examples of **squared patterned palindromic-type expressions**. These are derived from the results given in Section 2.

## 1.2 Patterns with Squared Expression

1.

$$\begin{aligned} 12^2 + 21^2 &= 144 + 441 &:= 585 \\ 102^2 + 201^2 &= 10404 + 40401 &:= 50805 \\ 1002^2 + 2001^2 &= 1004004 + 4004001 &:= 5008005 \\ 10002^2 + 20001^2 &= 100040004 + 400040001 &:= 500080005 \\ 100002^2 + 200001^2 &= 10000400004 + 40000400001 &:= 50000800005 \end{aligned}$$

2.

$$\begin{aligned} 11^2 + 11^2 &= 121 + 121 &:= 242 \\ 101^2 + 101^2 &= 10201 + 10201 &:= 20402 \\ 1001^2 + 1001^2 &= 1002001 + 1002001 &:= 2004002 \\ 10001^2 + 10001^2 &= 100020001 + 100020001 &:= 200040002 \\ 100001^2 + 100001^2 &= 10000200001 + 10000200001 &:= 20000400002 \end{aligned}$$

3.

$$\begin{aligned} 12^2 + 21^2 &= 144 + 441 &:= 585 \\ 1102^2 + 2011^2 &= 1214404 + 4044121 &:= 5258525 \\ 111002^2 + 200111^2 &= 12321444004 + 40044412321 &:= 52365856325 \\ 11110002^2 + 20001111^2 &= 123432144440004 + 400044441234321 &:= 523476585674325 \\ 1111100002^2 + 2000011111^2 &= 1234543214444400004 + 4000044444123454321 &:= 5234587658567854325 \end{aligned}$$

4.

$$\begin{aligned}
101^2 + 101^2 &= 10201 + 10201 \\
1011^2 + 1101^2 &= 1022121 + 1212201 \\
10011^2 + 11001^2 &= 1002220121 + 121022001
\end{aligned}$$

5.

$$\begin{aligned}
13^2 + 31^2 &= 169 + 961 &:= 1130^* \\
103^2 + 301^2 &= 10609 + 90601 &:= 101210 \\
1003^2 + 3001^2 &= 1006009 + 9006001 &:= 10012010 \\
10003^2 + 30001^2 &= 100060009 + 900060001 &:= 1000120010
\end{aligned}$$

6.

$$\begin{aligned}
103^2 + 301^2 &= 10609 + 90601 &:= 101210 \\
101003^2 + 300101^2 &= 10201606009 + 90060610201 &:= 100262216210 \\
10010003^2 + 30001001^2 &= 100200160060009 + 900060061002001 &:= 1000260221062010 \\
1000100003^2 + 3000010001^2 &= 1000200016000600009 + 9000060006100020001 &:= 10000260022100620010
\end{aligned}$$

7.

$$\begin{aligned}
13^2 + 31^2 &= 169 + 961 \\
113^2 + 311^2 &= 12769 + 96721 \\
1113^2 + 3111^2 &= 1238769 + 9678321 \\
11113^2 + 31111^2 &= 123498769 + 967894321
\end{aligned}$$

8.

$$\begin{aligned}
13^2 + 31^2 &= 169 + 961 \\
103^2 + 301^2 &= 10609 + 90601 \\
1103^2 + 3011^2 &= 1216609 + 9066121 \\
11003^2 + 30011^2 &= 121066009 + 900660121
\end{aligned}$$

9.

$$\begin{aligned}
2012^2 + 2102^2 &= 4048144 + 4418404 &:= 8466548^* \\
20012^2 + 21002^2 &= 400480144 + 441084004 &:= 841564148 \\
200012^2 + 210002^2 &= 40004800144 + 44100840004 &:= 84105640148 \\
2000012^2 + 2100002^2 &= 4000048000144 + 4410008400004 &:= 8410056400148
\end{aligned}$$

10.

$$\begin{aligned}
2022^2 + 2202^2 &= 4088484 + 4848804 &:= 8937288^* \\
20022^2 + 22002^2 &= 400880484 + 484088004 &:= 884968488 \\
200022^2 + 220002^2 &= 40008800484 + 48400880004 &:= 88409680488 \\
2000022^2 + 2200002^2 &= 4000088000484 + 4840008800004 &:= 8840096800488
\end{aligned}$$

(\*) - in some cases, except the first line, other lines are patterned with final sums.

There are much more possibilities of writing similar kind of patterns. It is left to reader to bring more patterns based on examples given in section and subsections below.

## 2 Palindromic-Type Palindromes

This section brings palindromic numbers, those can be decompose in **palindromic-type expressions**. The work is separated according to number of digits. Due to high quantity of numbers, the work is limited to 7-digits or length 7 palindromes.

### 2.1 Single Digit Expressions

This section brings **palindromic-type squared expressions** having single digit. Final sums palindromic and non-palindromic are given in separately.

- Palindromic Sum

$$\begin{aligned}
1^2 + 1^2 &= 1 + 1 := 2 \\
2^2 + 2^2 &= 4 + 4 := 8
\end{aligned}$$

- Non-Palindromic Sum

$$3^2 + 3^2 = 9 + 9 := 18$$

### 2.2 Two Digits Expressions

This section brings **palindromic-type squared expressions** having two digits. Final sums palindromic and non-palindromic are given in separately.

- Palindromic Sum

$$\begin{aligned}
11^2 + 11^2 &= 121 + 121 := 242 \\
12^2 + 21^2 &= 144 + 441 := 585
\end{aligned}$$

- Non-Palindromic Sum

$$22^2 + 22^2 = 484 + 484 := 968$$

$$13^2 + 31^2 = 169 + 961 := 1130$$

## 2.3 Three Digits Expressions

This section brings **palindromic-type squared expressions** having three digits. Final sums palindromic and non-palindromic are given in separately.

- Palindromic Sum

$$101^2 + 101^2 = 10201 + 10201 := 20402$$

$$111^2 + 111^2 = 12321 + 12321 := 24642$$

$$102^2 + 201^2 = 10404 + 40401 := 50805$$

- Non-Palindromic Sum

$$121^2 + 121^2 = 14641 + 14641 := 29282$$

$$112^2 + 211^2 = 12544 + 44521 := 57065$$

$$122^2 + 221^2 = 14884 + 48841 := 63725$$

$$202^2 + 202^2 = 40804 + 40804 := 81608$$

$$212^2 + 212^2 = 44944 + 44944 := 89888$$

$$103^2 + 301^2 = 10609 + 90601 := 101210$$

$$113^2 + 311^2 = 12769 + 96721 := 109490$$

## 2.4 Four Digits Expressions

This section brings **palindromic-type squared expressions** having four digits. Final sums palindromic and non-palindromic are given in separately.

- Palindromic Sum

$$1001^2 + 1001^2 = 1002001 + 1002001 := 2004002$$

$$1011^2 + 1101^2 = 1022121 + 1212201 := 2234322$$

$$1111^2 + 1111^2 = 1234321 + 1234321 := 2468642$$

$$1021^2 + 1201^2 = 1042441 + 1442401 := 2484842$$

$$1002^2 + 2001^2 = 1004004 + 4004001 := 5008005$$

$$\begin{aligned}
1102^2 + 2011^2 &= 1214404 + 4044121 := 5258525 \\
1012^2 + 2101^2 &= 1024144 + 4414201 := 5438345 \\
1022^2 + 2201^2 &= 1044484 + 4844401 := 5888885
\end{aligned}$$

- Non-Palindromic Sum

$$\begin{aligned}
1121^2 + 1211^2 &= 1256641 + 1466521 := 2723162 \\
1031^2 + 1301^2 &= 1062961 + 1692601 := 2755562 \\
1202^2 + 2021^2 &= 1444804 + 4084441 := 5529245 \\
1112^2 + 2111^2 &= 1236544 + 4456321 := 5692865 \\
1212^2 + 2121^2 &= 1468944 + 4498641 := 5967585 \\
1122^2 + 2211^2 &= 1258884 + 4888521 := 6147405 \\
2002^2 + 2002^2 &= 4008004 + 4008004 := 8016008 \\
2012^2 + 2102^2 &= 4048144 + 4418404 := 8466548 \\
2022^2 + 2202^2 &= 4088484 + 4848804 := 8937288 \\
1003^2 + 3001^2 &= 1006009 + 9006001 := 10012010 \\
1103^2 + 3011^2 &= 1216609 + 9066121 := 10282730 \\
1013^2 + 3101^2 &= 1026169 + 9616201 := 10642370 \\
1113^2 + 3111^2 &= 1238769 + 9678321 := 10917090
\end{aligned}$$

## 2.5 Five Digits Expressions

This section brings **palindromic-type squared expressions** having five digits. Final sums palindromic and non-palindromic are given in separately.

- Palindromic Sum

$$\begin{aligned}
10001^2 + 10001^2 &= 100020001 + 100020001 := 200040002 \\
10101^2 + 10101^2 &= 102030201 + 102030201 := 204060402 \\
10011^2 + 11001^2 &= 100220121 + 121022001 := 221242122 \\
10111^2 + 11101^2 &= 102232321 + 123232201 := 225464522 \\
11011^2 + 11011^2 &= 121242121 + 121242121 := 242484242 \\
10021^2 + 12001^2 &= 100420441 + 144024001 := 244444442 \\
10121^2 + 12101^2 &= 102434641 + 146434201 := 248868842 \\
10031^2 + 13001^2 &= 100620961 + 169026001 := 269646962 \\
10002^2 + 20001^2 &= 100040004 + 400040001 := 500080005 \\
11002^2 + 20011^2 &= 121044004 + 400440121 := 521484125 \\
10012^2 + 21001^2 &= 100240144 + 441042001 := 541282145
\end{aligned}$$

$$12002^2 + 20021^2 = 144048004 + 400840441 := 544888445$$

$$10022^2 + 22001^2 = 100440484 + 484044001 := 584484485$$

• Non-Palindromic Sum

$$10201^2 + 10201^2 = 104060401 + 104060401 := 208120802$$

$$10211^2 + 11201^2 = 104264521 + 125462401 := 229726922$$

$$11111^2 + 11111^2 = 123454321 + 123454321 := 246908642$$

$$11211^2 + 11211^2 = 125686521 + 125686521 := 251373042$$

$$10221^2 + 12201^2 = 104468841 + 148864401 := 253333242$$

$$11021^2 + 12011^2 = 121462441 + 144264121 := 265726562$$

$$11121^2 + 12111^2 = 123676641 + 146676321 := 270352962$$

$$11031^2 + 13011^2 = 121682961 + 169286121 := 290969082$$

$$10102^2 + 20101^2 = 102050404 + 404050201 := 506100605$$

$$10202^2 + 20201^2 = 104080804 + 408080401 := 512161205$$

$$11102^2 + 20111^2 = 123254404 + 404452321 := 527706725$$

$$11202^2 + 20211^2 = 125484804 + 408484521 := 533969325$$

$$10112^2 + 21101^2 = 102252544 + 445252201 := 547504745$$

$$12102^2 + 20121^2 = 146458404 + 404854641 := 551313045$$

$$10212^2 + 21201^2 = 104284944 + 449482401 := 553767345$$

$$12202^2 + 20221^2 = 148888804 + 408888841 := 557777645$$

$$11012^2 + 21011^2 = 121264144 + 441462121 := 562726265$$

$$11112^2 + 21111^2 = 123476544 + 445674321 := 569150865$$

$$12012^2 + 21021^2 = 144288144 + 441882441 := 586170585$$

$$10122^2 + 22101^2 = 102454884 + 488454201 := 590909085$$

$$11022^2 + 22011^2 = 121484484 + 484484121 := 605968605$$

$$11122^2 + 22111^2 = 123698884 + 488896321 := 612595205$$

$$20002^2 + 20002^2 = 400080004 + 400080004 := 800160008$$

$$20102^2 + 20102^2 = 404090404 + 404090404 := 808180808$$

$$20012^2 + 21002^2 = 400480144 + 441084004 := 841564148$$

$$20112^2 + 21102^2 = 404492544 + 445294404 := 849786948$$

$$20022^2 + 22002^2 = 400880484 + 484088004 := 884968488$$

$$20122^2 + 22102^2 = 404894884 + 488498404 := 893393288$$

$$10003^2 + 30001^2 = 100060009 + 900060001 := 1000120010$$

$$10103^2 + 30101^2 = 102070609 + 906070201 := 1008140810$$

$$11003^2 + 30011^2 = 121066009 + 900660121 := 1021726130$$

$$11103^2 + 30111^2 = 123276609 + 906672321 := 1029948930$$

$$10013^2 + 31001^2 = 100260169 + 961062001 := 1061322170$$



$$\begin{aligned}
10113^2 + 31101^2 &= 102272769 + 967272201 := 1069544970 \\
11013^2 + 31011^2 &= 121286169 + 961682121 := 1082968290 \\
11113^2 + 31111^2 &= 123498769 + 967894321 := 1091393090
\end{aligned}$$

## 2.6 Six Digits Expressions

This section brings **palindromic-type squared expressions** having six digits. Final sums palindromic and non-palindromic are given in separately.

- **Palindromic Sum**

$$\begin{aligned}
10001^2 + 10001^2 &= 1000200001 + 1000200001 := 2000400002 \\
100101^2 + 101001^2 &= 10020210201 + 10201202001 := 20221412202 \\
101101^2 + 101101^2 &= 10221412201 + 10221412201 := 20442824402 \\
100201^2 + 102001^2 &= 10040240401 + 10404204001 := 20444444402 \\
100301^2 + 103001^2 &= 10060290601 + 10609206001 := 20669496602 \\
100011^2 + 110001^2 &= 10002200121 + 12100220001 := 22102420122 \\
101011^2 + 110101^2 &= 10203222121 + 12122230201 := 22325452322 \\
100111^2 + 111001^2 &= 10022212321 + 12321222001 := 22343434322 \\
101111^2 + 111101^2 &= 10223434321 + 12343432201 := 22566866522 \\
100211^2 + 112001^2 &= 10042244521 + 12544224001 := 22586468522 \\
110011^2 + 110011^2 &= 12102420121 + 12102420121 := 24204840242 \\
100021^2 + 120001^2 &= 10004200441 + 14400240001 := 24404440442 \\
110111^2 + 111011^2 &= 12124432321 + 12323442121 := 24447874442 \\
101021^2 + 120101^2 &= 10205242441 + 14424250201 := 24629492642 \\
100121^2 + 121001^2 &= 10024214641 + 14641242001 := 24665456642 \\
100031^2 + 130001^2 &= 10006200961 + 16900260001 := 26906460962 \\
100002^2 + 200001^2 &= 10000400004 + 40000400001 := 50000800005 \\
101002^2 + 200101^2 &= 10201404004 + 40040410201 := 50241814205 \\
100102^2 + 201001^2 &= 10020410404 + 40401402001 := 50421812405 \\
102002^2 + 200201^2 &= 10404408004 + 40080440401 := 50484848405 \\
100202^2 + 202001^2 &= 10040440804 + 40804404001 := 50844844805 \\
110002^2 + 200011^2 &= 12100440004 + 40004400121 := 52104840125 \\
111002^2 + 200111^2 &= 12321444004 + 40044412321 := 52365856325 \\
110102^2 + 201011^2 &= 12122450404 + 40405422121 := 52527872525 \\
100012^2 + 210001^2 &= 10002400144 + 44100420001 := 54102820145 \\
101012^2 + 210101^2 &= 10203424144 + 44142430201 := 54345854345 \\
120002^2 + 200021^2 &= 14400480004 + 40008400441 := 54408880445 \\
100112^2 + 211001^2 &= 10022412544 + 44521422001 := 54543834545
\end{aligned}$$

$$\begin{aligned}
121002^2 + 200121^2 &= 14641484004 + 40048414641 := 54689898645 \\
100212^2 + 212001^2 &= 10042444944 + 44944424001 := 54986868945 \\
100022^2 + 220001^2 &= 10004400484 + 48400440001 := 58404840485 \\
101022^2 + 220101^2 &= 10205444484 + 48444450201 := 58649894685 \\
100122^2 + 221001^2 &= 10024414884 + 48841442001 := 58865856885
\end{aligned}$$

• Non-Palindromic Sum

$$\begin{aligned}
101201^2 + 102101^2 &= 10241642401 + 10424614201 := 20666256602 \\
101301^2 + 103101^2 &= 10261892601 + 10629816201 := 20891708802 \\
102011^2 + 110201^2 &= 10406244121 + 12144260401 := 22550504522 \\
102111^2 + 111201^2 &= 10426656321 + 12365662401 := 22792318722 \\
101211^2 + 112101^2 &= 10243666521 + 12566634201 := 22810300722 \\
100311^2 + 113001^2 &= 10062296721 + 12769226001 := 22831522722 \\
111111^2 + 111111^2 &= 12345654321 + 12345654321 := 24691308642 \\
110211^2 + 112011^2 &= 12146464521 + 12546464121 := 24692928642 \\
102021^2 + 120201^2 &= 10408284441 + 14448280401 := 24856564842 \\
101121^2 + 121101^2 &= 10225456641 + 14665452201 := 24890908842 \\
100221^2 + 122001^2 &= 10044248841 + 14884244001 := 24928492842 \\
111211^2 + 112111^2 &= 12367886521 + 12568876321 := 24936762842 \\
102121^2 + 121201^2 &= 10428698641 + 14689682401 := 25118381042 \\
110021^2 + 120011^2 &= 12104620441 + 14402640121 := 26507260562 \\
111021^2 + 120111^2 &= 12325662441 + 14426652321 := 26752314762 \\
110121^2 + 121011^2 &= 12126634641 + 14643662121 := 26770296762 \\
111121^2 + 121111^2 &= 12347876641 + 14667874321 := 27015750962 \\
110221^2 + 122011^2 &= 12148668841 + 14886684121 := 27035352962 \\
101031^2 + 130101^2 &= 10207262961 + 16926270201 := 27133533162 \\
110031^2 + 130011^2 &= 12106820961 + 16902860121 := 29009681082 \\
111031^2 + 130111^2 &= 12327882961 + 16928872321 := 29256755282 \\
101102^2 + 201101^2 &= 10221614404 + 40441612201 := 50663226605 \\
102102^2 + 201201^2 &= 10424818404 + 40481842401 := 50906660805 \\
101202^2 + 202101^2 &= 10241844804 + 40844814201 := 51086659005 \\
112002^2 + 200211^2 &= 12544448004 + 40084444521 := 52628892525 \\
111102^2 + 201111^2 &= 12343654404 + 40445634321 := 52789288725 \\
110202^2 + 202011^2 &= 12144480804 + 40808444121 := 52952924925 \\
112102^2 + 201211^2 &= 12566858404 + 40485866521 := 53052724925 \\
111202^2 + 202111^2 &= 12365884804 + 40848856321 := 53214741125 \\
102012^2 + 210201^2 &= 10406448144 + 44184460401 := 54590908545
\end{aligned}$$

$$\begin{aligned}
101112^2 + 211101^2 &= 10223636544 + 44563632201 := 54787268745 \\
120102^2 + 201021^2 &= 14424490404 + 40409442441 := 54833932845 \\
122002^2 + 200221^2 &= 14884488004 + 40088448841 := 54972936845 \\
121102^2 + 201121^2 &= 14665694404 + 40449656641 := 55115351045 \\
101212^2 + 212101^2 &= 10243868944 + 44986834201 := 55230703145 \\
110012^2 + 210011^2 &= 12102640144 + 44104620121 := 56207260265 \\
111012^2 + 210111^2 &= 12323664144 + 44146632321 := 56470296465 \\
110112^2 + 211011^2 &= 12124652544 + 44525642121 := 56650294665 \\
112012^2 + 210211^2 &= 12546688144 + 44188664521 := 56735352665 \\
111112^2 + 211111^2 &= 12345876544 + 44567854321 := 56913730865 \\
110212^2 + 212011^2 &= 12146684944 + 44948664121 := 57095349065 \\
120012^2 + 210021^2 &= 14402880144 + 44108820441 := 58511700585 \\
102022^2 + 220201^2 &= 10408488484 + 48488480401 := 58896968885 \\
120112^2 + 211021^2 &= 14426892544 + 44529862441 := 58956754985 \\
101122^2 + 221101^2 &= 10225658884 + 48885652201 := 59111311085 \\
110022^2 + 220011^2 &= 12104840484 + 48404840121 := 60509680605 \\
111022^2 + 220111^2 &= 12325884484 + 48448852321 := 60774736805 \\
110122^2 + 221011^2 &= 12126854884 + 48845862121 := 60972717005 \\
200002^2 + 200002^2 &= 40000800004 + 40000800004 := 80001600008 \\
200102^2 + 201002^2 &= 40040810404 + 40401804004 := 80442614408 \\
200202^2 + 202002^2 &= 40080840804 + 40804808004 := 80885648808 \\
200012^2 + 210002^2 &= 40004800144 + 44100840004 := 84105640148 \\
201012^2 + 210102^2 &= 40405824144 + 44142850404 := 84548674548 \\
200112^2 + 211002^2 &= 40044812544 + 44521844004 := 84566656548 \\
202012^2 + 210202^2 &= 40808848144 + 44184880804 := 84993728948 \\
200212^2 + 212002^2 &= 40084844944 + 44944848004 := 85029692948 \\
200022^2 + 220002^2 &= 40008800484 + 48400880004 := 88409680488 \\
201022^2 + 220102^2 &= 40409844484 + 48444890404 := 88854734888 \\
200122^2 + 221002^2 &= 40048814884 + 48841884004 := 88890698888 \\
100003^2 + 300001^2 &= 10000600009 + 90000600001 := 100001200010 \\
101003^2 + 300101^2 &= 10201606009 + 90060610201 := 100262216210 \\
100103^2 + 301001^2 &= 10020610609 + 90601602001 := 100622212610 \\
101103^2 + 301101^2 &= 10221816609 + 90661812201 := 100883628810 \\
110003^2 + 300011^2 &= 12100660009 + 90006600121 := 102107260130 \\
111003^2 + 300111^2 &= 12321666009 + 90066612321 := 102388278330 \\
110103^2 + 301011^2 &= 12122670609 + 90607622121 := 102730292730 \\
111103^2 + 301111^2 &= 12343876609 + 90667834321 := 103011710930 \\
100013^2 + 310001^2 &= 10002600169 + 96100620001 := 106103220170
\end{aligned}$$

$$\begin{aligned}
101013^2 + 310101^2 &= 10203626169 + 96162630201 := 106366256370 \\
100113^2 + 311001^2 &= 10022612769 + 96721622001 := 106744234770 \\
101113^2 + 311101^2 &= 10223838769 + 96783832201 := 107007670970 \\
110013^2 + 310011^2 &= 12102860169 + 96106820121 := 108209680290 \\
111013^2 + 310111^2 &= 12323886169 + 96168832321 := 108492718490 \\
110113^2 + 311011^2 &= 12124872769 + 96727842121 := 108852714890
\end{aligned}$$

## 2.7 Seven Digits Expressions

This section brings **palindromic-type squared expressions** having seven digits. Final sums palindromic and non-palindromic are given in separately.

### • Palindromic Sum

$$\begin{aligned}
100001^2 + 100001^2 &= 100002000001 + 100002000001 := 200004000002 \\
1001001^2 + 1001001^2 &= 1002003002001 + 1002003002001 := 2004006004002 \\
1000101^2 + 1010001^2 &= 1000202010201 + 1020102020001 := 2020304030202 \\
1001101^2 + 1011001^2 &= 1002203212201 + 1022123022001 := 2024326234202 \\
1010101^2 + 1010101^2 &= 1020304030201 + 1020304030201 := 2040608060402 \\
1000201^2 + 1020001^2 &= 1000402040401 + 1040402040001 := 2040804080402 \\
1001201^2 + 1021001^2 &= 1002403442401 + 1042443042001 := 2044846484402 \\
1000011^2 + 1100001^2 &= 1000022000121 + 1210002200001 := 2210024200122 \\
1001011^2 + 1101001^2 &= 1002023022121 + 1212203202001 := 2214226224122 \\
1010011^2 + 1100101^2 &= 1020122220121 + 1210222210201 := 2230344430322 \\
1000111^2 + 1110001^2 &= 1000222012321 + 1232102220001 := 2232324232322 \\
1011011^2 + 1101101^2 &= 1022143242121 + 1212423412201 := 2234566654322 \\
1001111^2 + 1111001^2 &= 1002223234321 + 1234323222001 := 2236546456322 \\
1020011^2 + 1100201^2 &= 1040422440121 + 1210442240401 := 2250864680522 \\
1010111^2 + 1110101^2 &= 1020324232321 + 1232324230201 := 2252648462522 \\
1000211^2 + 1120001^2 &= 1000422044521 + 1254402240001 := 2254824284522 \\
1100011^2 + 1100011^2 &= 1210024200121 + 1210024200121 := 2420048400242 \\
1000021^2 + 1200001^2 &= 1000042000441 + 1440002400001 := 2440044400442 \\
1100111^2 + 1110011^2 &= 1210244212321 + 1232124420121 := 2442368632442 \\
1001021^2 + 1201001^2 &= 1002043042441 + 1442403402001 := 2444446444442 \\
1010021^2 + 1200101^2 &= 1020142420441 + 1440242410201 := 2460384830642 \\
1000121^2 + 1210001^2 &= 1000242014641 + 1464102420001 := 2464344434642 \\
1100211^2 + 1120011^2 &= 1210464244521 + 1254424640121 := 2464888884642 \\
1001121^2 + 1211001^2 &= 1002243256641 + 1466523422001 := 2468766678642 \\
1010121^2 + 1210101^2 &= 1020344434641 + 1464344430201 := 2484688864842
\end{aligned}$$

$$\begin{aligned}
1000221^2 + 1220001^2 &= 1000442048841 + 1488402440001 := 2488844488842 \\
1000031^2 + 1300001^2 &= 1000062000961 + 1690002600001 := 2690064600962 \\
1001031^2 + 1301001^2 &= 1002063062961 + 1692603602001 := 2694666664962 \\
1000002^2 + 2000001^2 &= 1000004000004 + 4000004000001 := 5000008000005 \\
1010002^2 + 2000101^2 &= 1020104040004 + 4000404010201 := 5020508050205 \\
1000102^2 + 2010001^2 &= 1000204010404 + 4040104020001 := 5040308030405 \\
1000202^2 + 2020001^2 &= 1000404040804 + 4080404040001 := 5080808080805 \\
1100002^2 + 2000011^2 &= 1210004400004 + 4000044000121 := 5210048400125 \\
1110002^2 + 2000111^2 &= 1232104440004 + 4000444012321 := 5232548452325 \\
1100102^2 + 2010011^2 &= 1210224410404 + 4040144220121 := 5250368630525 \\
1100202^2 + 2020011^2 &= 1210444440804 + 4080444440121 := 5290888880925 \\
1000012^2 + 2100001^2 &= 1000024000144 + 4410004200001 := 5410028200145 \\
1010012^2 + 2100101^2 &= 1020124240144 + 4410424210201 := 5430548450345 \\
1200002^2 + 2000021^2 &= 1440004800004 + 4000084000441 := 5440088800445 \\
1000112^2 + 2110001^2 &= 1000224012544 + 4452104220001 := 5452328232545 \\
1210002^2 + 2000121^2 &= 1464104840004 + 4000484014641 := 5464588854645 \\
1000212^2 + 2120001^2 &= 1000424044944 + 4494404240001 := 5494828284945 \\
1000022^2 + 2200001^2 &= 1000044000484 + 4840004400001 := 5840048400485 \\
1010022^2 + 2200101^2 &= 1020144440484 + 4840444410201 := 5860588850685 \\
1000122^2 + 2210001^2 &= 1000244014884 + 4884104420001 := 5884348434885
\end{aligned}$$

#### • Non-Palindromic Sum

$$\begin{aligned}
1002001^2 + 1002001^2 &= 1004006004001 + 1004006004001 := 2008012008002 \\
1002101^2 + 1012001^2 &= 1004206414201 + 1024146024001 := 2028352438202 \\
1011101^2 + 1011101^2 &= 1022325232201 + 1022325232201 := 2044650464402 \\
1012101^2 + 1012101^2 &= 1024348434201 + 1024348434201 := 2048696868402 \\
1002201^2 + 1022001^2 &= 1004406844401 + 1044486044001 := 2048892888402 \\
1010201^2 + 1020101^2 &= 1020506060401 + 1040606050201 := 2061112110602 \\
1000301^2 + 1030001^2 &= 1000602090601 + 1060902060001 := 2061504150602 \\
1011201^2 + 1021101^2 &= 1022527462401 + 1042647252201 := 2065174714602 \\
1001301^2 + 1031001^2 &= 1002603692601 + 1062963062001 := 2065566754602 \\
1002011^2 + 1102001^2 &= 1004026044121 + 1214406204001 := 2218432248122 \\
1012011^2 + 1102101^2 &= 1024166264121 + 1214626614201 := 2238792878322 \\
1002111^2 + 1112001^2 &= 1004226456321 + 1236546224001 := 2240772680322 \\
1021011^2 + 1101201^2 &= 1042463462121 + 1212643642401 := 2255107104522 \\
1011111^2 + 1111101^2 &= 1022345454321 + 1234545432201 := 2256890886522 \\
1001211^2 + 1121001^2 &= 1002423466521 + 1256643242001 := 2259066708522
\end{aligned}$$

$$\begin{aligned}
1012111^2 + 1112101^2 &= 1024368676321 + 1236768634201 := 2261137310522 \\
1002211^2 + 1122001^2 &= 1004426888521 + 1258886244001 := 2263313132522 \\
1030011^2 + 1100301^2 &= 1060922660121 + 1210662290601 := 2271584950722 \\
1020111^2 + 1110201^2 &= 1040626452321 + 1232546260401 := 2273172712722 \\
1010211^2 + 1120101^2 &= 1020526264521 + 1254626250201 := 2275152514722 \\
1031011^2 + 1101301^2 &= 1062983682121 + 1212863892601 := 2275847574722 \\
1021111^2 + 1111201^2 &= 1042667674321 + 1234767662401 := 2277435336722 \\
1000311^2 + 1130001^2 &= 1000622096721 + 1276902260001 := 2277524356722 \\
1011211^2 + 1121101^2 &= 1022547686521 + 1256867452201 := 2279415138722 \\
1102011^2 + 1102011^2 &= 1214428244121 + 1214428244121 := 2428856488242 \\
1101111^2 + 1111011^2 &= 1212445434321 + 1234345442121 := 2446790876442 \\
1002021^2 + 1202001^2 &= 1004046084441 + 1444806404001 := 2448852488442 \\
1102111^2 + 1112011^2 &= 1214648656321 + 1236568464121 := 2451217120442 \\
1110111^2 + 1110111^2 &= 1232346432321 + 1232346432321 := 2464692864642 \\
1011021^2 + 1201101^2 &= 1022163462441 + 1442643612201 := 2464807074642 \\
1111111^2 + 1111111^2 &= 1234567654321 + 1234567654321 := 2469135308642 \\
1101211^2 + 1121011^2 &= 1212665666521 + 1256665662121 := 2469331328642 \\
1002121^2 + 1212001^2 &= 1004246498641 + 1468946424001 := 2473192922642 \\
1020021^2 + 1200201^2 &= 1040442840441 + 1440482440401 := 2480925280842 \\
1021021^2 + 1201201^2 &= 1042483882441 + 1442883842401 := 2485367724842 \\
1110211^2 + 1120111^2 &= 1232568464521 + 1254648652321 := 2487217116842 \\
1100311^2 + 1130011^2 &= 1210684296721 + 1276924860121 := 2487609156842 \\
1011121^2 + 1211101^2 &= 1022365676641 + 1466765632201 := 2489131308842 \\
1111211^2 + 1121111^2 &= 1234789886521 + 1256889874321 := 2491679760842 \\
1020121^2 + 1210201^2 &= 1040646854641 + 1464586460401 := 2505233315042 \\
1010221^2 + 1220101^2 &= 1020546468841 + 1488646450201 := 2509192919042 \\
1100021^2 + 1200011^2 &= 1210046200441 + 1440026400121 := 2650072600562 \\
1101021^2 + 1201011^2 &= 1212247242441 + 1442427422121 := 2654674664562 \\
1110021^2 + 1200111^2 &= 1232146620441 + 1440266412321 := 2672413032762 \\
1100121^2 + 1210011^2 &= 1210266214641 + 1464126620121 := 2674392834762 \\
1111021^2 + 1201111^2 &= 1234367662441 + 1442667634321 := 2677035296762 \\
1101121^2 + 1211011^2 &= 1212467456641 + 1466547642121 := 2679015098762 \\
1110121^2 + 1210111^2 &= 1232368634641 + 1464368632321 := 2696737266962 \\
1100221^2 + 1220011^2 &= 1210486248841 + 1488426840121 := 2698913088962 \\
1111121^2 + 1211111^2 &= 1234589876641 + 1466789854321 := 2701379730962 \\
1010031^2 + 1300101^2 &= 1020162620961 + 1690262610201 := 2710425231162 \\
1011031^2 + 1301101^2 &= 1022183682961 + 1692863812201 := 2715047495162 \\
1100031^2 + 1300011^2 &= 1210068200961 + 1690028600121 := 2900096801082
\end{aligned}$$

$$\begin{aligned}
1101031^2 + 1301011^2 &= 1212269262961 + 1692629622121 := 2904898885082 \\
1110031^2 + 1300111^2 &= 1232168820961 + 1690288612321 := 2922457433282 \\
1111031^2 + 1301111^2 &= 1234389882961 + 1692889834321 := 2927279717282 \\
1001002^2 + 2001001^2 &= 1002005004004 + 4004005002001 := 5006010006005 \\
1002002^2 + 2002001^2 &= 1004008008004 + 4008008004001 := 5012016012005 \\
1011002^2 + 2001101^2 &= 1022125044004 + 4004405212201 := 5026530256205 \\
1012002^2 + 2002101^2 &= 1024148048004 + 4008408414201 := 5032556462205 \\
1020002^2 + 2000201^2 &= 1040404080004 + 4000804040401 := 5041208120405 \\
1001102^2 + 2011001^2 &= 1002205214404 + 4044125022001 := 5046330236405 \\
1021002^2 + 2001201^2 &= 1042445084004 + 4004805442401 := 5047250526405 \\
1002102^2 + 2012001^2 &= 1004208418404 + 4048148024001 := 5052356442405 \\
1022002^2 + 2002201^2 &= 1044488088004 + 4008808844401 := 5053296932405 \\
1010102^2 + 2010101^2 &= 1020306050404 + 4040506030201 := 5060812080605 \\
1011102^2 + 2011101^2 &= 1022327254404 + 4044527232201 := 5066854486605 \\
1020102^2 + 2010201^2 &= 1040608090404 + 4040908060401 := 5081516150805 \\
1001202^2 + 2021001^2 &= 1002405444804 + 4084445042001 := 5086850486805 \\
1021102^2 + 2011201^2 &= 1042649294404 + 4044929462401 := 5087578756805 \\
1002202^2 + 2022001^2 &= 1004408848804 + 4088488044001 := 5092896892805 \\
1010202^2 + 2020101^2 &= 1020508080804 + 4080808050201 := 5101316131005 \\
1011202^2 + 2021101^2 &= 1022529484804 + 4084849252201 := 5107378737005 \\
1101002^2 + 2001011^2 &= 1212205404004 + 4004045022121 := 5216250426125 \\
1102002^2 + 2002011^2 &= 1214408408004 + 4008048044121 := 5222456452125 \\
1111002^2 + 2001111^2 &= 1234325444004 + 4004445234321 := 5238770678325 \\
1112002^2 + 2002111^2 &= 1236548448004 + 4008448456321 := 5244996904325 \\
1120002^2 + 2000211^2 &= 1254404480004 + 4000844044521 := 5255248524525 \\
1101102^2 + 2011011^2 &= 1212425614404 + 4044165242121 := 5256590856525 \\
1121002^2 + 2001211^2 &= 1256645484004 + 4004845466521 := 5261490950525 \\
1102102^2 + 2012011^2 &= 1214628818404 + 4048188264121 := 5262817082525 \\
1122002^2 + 2002211^2 &= 1258888488004 + 4008848888521 := 5267737376525 \\
1110102^2 + 2010111^2 &= 1232326450404 + 4040546232321 := 5272872682725 \\
1111102^2 + 2011111^2 &= 1234547654404 + 4044567454321 := 5279115108725 \\
1120102^2 + 2010211^2 &= 1254628490404 + 4040948264521 := 5295576754925 \\
1101202^2 + 2021011^2 &= 1212645844804 + 4084485462121 := 5297131306925 \\
1121102^2 + 2011211^2 &= 1256869694404 + 4044969686521 := 5301839380925 \\
1110202^2 + 2020111^2 &= 1232548480804 + 4080848452321 := 5313396933125 \\
1111202^2 + 2021111^2 &= 1234769884804 + 4084889674321 := 5319659559125 \\
1001012^2 + 2101001^2 &= 1002025024144 + 4414205202001 := 5416230226145 \\
1002012^2 + 2102001^2 &= 1004028048144 + 4418408204001 := 5422436252145
\end{aligned}$$

$$\begin{aligned}
1011012^2 + 2101101^2 &= 1022145264144 + 4414625412201 := 5436770676345 \\
1012012^2 + 2102101^2 &= 1024168288144 + 4418828614201 := 5442996902345 \\
1201002^2 + 2001021^2 &= 1442405804004 + 4004085042441 := 5446490846445 \\
1020012^2 + 2100201^2 &= 1040424480144 + 4410844240401 := 5451268720545 \\
1202002^2 + 2002021^2 &= 1444808808004 + 4008088084441 := 5452896892445 \\
1001112^2 + 2111001^2 &= 1002225236544 + 4456325222001 := 5458550458545 \\
1211002^2 + 2001121^2 &= 1466525844004 + 4004485256641 := 5471011100645 \\
1010112^2 + 2110101^2 &= 1020326252544 + 4452526230201 := 5472852482745 \\
1212002^2 + 2002121^2 &= 1468948848004 + 4008488498641 := 5477437346645 \\
1011112^2 + 2111101^2 &= 1022347476544 + 4456747432201 := 5479094908745 \\
1200102^2 + 2010021^2 &= 1440244810404 + 4040184420441 := 5480429230845 \\
1220002^2 + 2000221^2 &= 1488404880004 + 4000884048841 := 5489288928845 \\
1020112^2 + 2110201^2 &= 1040628492544 + 4452948260401 := 5493576752945 \\
1001212^2 + 2121001^2 &= 1002425468944 + 4498645242001 := 5501070710945 \\
1210102^2 + 2010121^2 &= 1464346850404 + 4040586434641 := 5504933285045 \\
1010212^2 + 2120101^2 &= 1020528284944 + 4494828250201 := 5515356535145 \\
1200202^2 + 2020021^2 &= 1440484840804 + 4080484840441 := 5520969681245 \\
1220102^2 + 2010221^2 &= 1488648890404 + 4040988468841 := 5529637359245 \\
1210202^2 + 2020121^2 &= 1464588880804 + 4080888854641 := 5545477735445 \\
1100012^2 + 2100011^2 &= 1210026400144 + 4410046200121 := 5620072600265 \\
1101012^2 + 2101011^2 &= 1212227424144 + 4414247222121 := 5626474646265 \\
1110012^2 + 2100111^2 &= 1232126640144 + 4410466212321 := 5642592852465 \\
1111012^2 + 2101111^2 &= 1234347664144 + 4414667434321 := 5649015098465 \\
1100112^2 + 2110011^2 &= 1210246412544 + 4452146420121 := 5662392832665 \\
1120012^2 + 2100211^2 &= 1254426880144 + 4410886244521 := 5665313124665 \\
1101112^2 + 2111011^2 &= 1212447636544 + 4456367442121 := 5668815078665 \\
1110112^2 + 2110111^2 &= 1232348652544 + 4452568432321 := 5684917084865 \\
1111112^2 + 2111111^2 &= 1234569876544 + 4456789654321 := 5691359530865 \\
1100212^2 + 2120011^2 &= 1210466444944 + 4494446640121 := 5704913085065 \\
1101212^2 + 2121011^2 &= 1212667868944 + 4498687662121 := 5711355531065 \\
1001022^2 + 2201001^2 &= 1002045044484 + 4844405402001 := 5846450446485 \\
1200012^2 + 2100021^2 &= 1440028800144 + 4410088200441 := 5850117000585 \\
1002022^2 + 2202001^2 &= 1004048088484 + 4848808404001 := 5852856492485 \\
1201012^2 + 2101021^2 &= 1442429824144 + 4414289242441 := 5856719066585 \\
1011022^2 + 2201101^2 &= 1022165484484 + 4844845612201 := 5867011096685 \\
1020022^2 + 2200201^2 &= 1040444880484 + 4840884440401 := 5881329320885 \\
1001122^2 + 2211001^2 &= 1002245258884 + 4888525422001 := 5890770680885 \\
1200112^2 + 2110021^2 &= 1440268812544 + 4452188620441 := 5892457432985
\end{aligned}$$



$$\begin{aligned}
1010122^2 + 2210101^2 &= 1020346454884 + 4884546430201 := 5904892885085 \\
1011122^2 + 2211101^2 &= 1022367698884 + 4888967632201 := 5911335331085 \\
1020122^2 + 2210201^2 &= 1040648894884 + 4884988460401 := 5925637355285 \\
1100022^2 + 2200011^2 &= 1210048400484 + 4840048400121 := 6050096800605 \\
1101022^2 + 2201011^2 &= 1212249444484 + 4844449422121 := 6056698866605 \\
1110022^2 + 2200111^2 &= 1232148840484 + 4840488412321 := 6072637252805 \\
1111022^2 + 2201111^2 &= 1234369884484 + 4844889634321 := 6079259518805 \\
1100122^2 + 2210011^2 &= 1210268414884 + 4884148620121 := 6094417035005 \\
1101122^2 + 2211011^2 &= 1212469658884 + 4888569642121 := 6101039301005 \\
2000002^2 + 2000002^2 &= 4000008000004 + 4000008000004 := 8000016000008 \\
2001002^2 + 2001002^2 &= 4004009004004 + 4004009004004 := 8008018008008 \\
2000102^2 + 2010002^2 &= 4000408010404 + 4040108040004 := 8040516050408 \\
2001102^2 + 2011002^2 &= 4004409214404 + 4044129044004 := 8048538258408 \\
2000202^2 + 2020002^2 &= 4000808040804 + 4080408080004 := 8081216120808 \\
2001202^2 + 2021002^2 &= 4004809444804 + 4084449084004 := 8089258528808 \\
2000012^2 + 2100002^2 &= 4000048000144 + 4410008400004 := 8410056400148 \\
2001012^2 + 2101002^2 &= 4004049024144 + 4414209404004 := 8418258428148 \\
2010012^2 + 2100102^2 &= 4040148240144 + 4410428410404 := 8450576650548 \\
2000112^2 + 2110002^2 &= 4000448012544 + 4452108440004 := 8452556452548 \\
2011012^2 + 2101102^2 &= 4044169264144 + 4414629614404 := 8458798878548 \\
2001112^2 + 2111002^2 &= 4004449236544 + 4456329444004 := 8460778680548 \\
2020012^2 + 2100202^2 &= 4080448480144 + 4410848440804 := 8491296920948 \\
2000212^2 + 2120002^2 &= 4000848044944 + 4494408480004 := 8495256524948 \\
2001212^2 + 2121002^2 &= 4004849468944 + 4498649484004 := 8503498952948 \\
2000022^2 + 2200002^2 &= 4000088000484 + 4840008800004 := 8840096800488 \\
2001022^2 + 2201002^2 &= 4004089044484 + 4844409804004 := 8848498848488 \\
2010022^2 + 2200102^2 &= 4040188440484 + 4840448810404 := 8880637250888 \\
2000122^2 + 2210002^2 &= 4000488014884 + 4884108840004 := 8884596854888 \\
2001122^2 + 2211002^2 &= 4004489258884 + 4888529844004 := 8893019102888 \\
2020022^2 + 2200202^2 &= 4080488880484 + 4840888840804 := 8921377721288 \\
1000003^2 + 3000001^2 &= 1000006000009 + 9000006000001 := 10000012000010 \\
1001003^2 + 3001001^2 &= 1002007006009 + 9006007002001 := 10008014008010 \\
1010003^2 + 3000101^2 &= 1020106060009 + 9000606010201 := 10020712070210 \\
1011003^2 + 3001101^2 &= 1022127066009 + 9006607212201 := 10028734278210 \\
1000103^2 + 3010001^2 &= 1000206010609 + 9060106020001 := 10060312030610 \\
1001103^2 + 3011001^2 &= 1002207216609 + 9066127022001 := 10068334238610 \\
1010103^2 + 3010101^2 &= 1020308070609 + 9060708030201 := 10081016100810 \\
1011103^2 + 3011101^2 &= 1022329276609 + 9066729232201 := 10089058508810
\end{aligned}$$

$$\begin{aligned}
1100003^2 + 3000011^2 &= 1210006600009 + 9000066000121 := 10210072600130 \\
1101003^2 + 3001011^2 &= 1212207606009 + 9006067022121 := 10218274628130 \\
1110003^2 + 3000111^2 &= 1232106660009 + 9000666012321 := 10232772672330 \\
1111003^2 + 3001111^2 &= 1234327666009 + 9006667234321 := 10240994900330 \\
1100103^2 + 3010011^2 &= 1210226610609 + 9060166220121 := 10270392830730 \\
1101103^2 + 3011011^2 &= 1212427816609 + 9066187242121 := 10278615058730 \\
1110103^2 + 3010111^2 &= 1232328670609 + 9060768232321 := 10293096902930 \\
1111103^2 + 3011111^2 &= 1234549876609 + 9066789454321 := 10301339330930 \\
1000013^2 + 3100001^2 &= 1000026000169 + 9610006200001 := 10610032200170 \\
1001013^2 + 3101001^2 &= 1002027026169 + 9616207202001 := 10618234228170 \\
1010013^2 + 3100101^2 &= 1020126260169 + 9610626210201 := 10630752470370 \\
1011013^2 + 3101101^2 &= 1022147286169 + 9616827412201 := 10638974698370 \\
1000113^2 + 3110001^2 &= 1000226012769 + 9672106220001 := 10672332232770 \\
1001113^2 + 3111001^2 &= 1002227238769 + 9678327222001 := 10680554460770 \\
1010113^2 + 3110101^2 &= 1020328272769 + 9672728230201 := 10693056502970 \\
1011113^2 + 3111101^2 &= 1022349498769 + 9678949432201 := 10701298930970 \\
1100013^2 + 3100011^2 &= 1210028600169 + 9610068200121 := 10820096800290 \\
1101013^2 + 3101011^2 &= 1212229626169 + 9616269222121 := 10828498848290 \\
1110013^2 + 3100111^2 &= 1232128860169 + 9610688212321 := 10842817072490 \\
1111013^2 + 3101111^2 &= 1234349886169 + 9616889434321 := 10851239320490 \\
1100113^2 + 3110011^2 &= 1210248612769 + 9672168420121 := 10882417032890 \\
1101113^2 + 3111011^2 &= 1212449838769 + 9678389442121 := 10890839280890
\end{aligned}$$

## 2.8 Eight Digits Expressions

This section brings **palindromic-type squared expressions** having eight digits. Final sums palindromic and non-palindromic are given in separately.

### • Palindromic Sum

$$\begin{aligned}
10000001^2 + 10000001^2 &= 100000020000001 + 100000020000001 := 200000040000002 \\
10001001^2 + 10010001^2 &= 100020021002001 + 100200120020001 := 200220141022002 \\
10011001^2 + 10011001^2 &= 100220141022001 + 100220141022001 := 200440282044002 \\
10002001^2 + 10020001^2 &= 100040024004001 + 100400420040001 := 200440444044002 \\
10003001^2 + 10030001^2 &= 100060029006001 + 100600920060001 := 200660949066002 \\
10000101^2 + 10100001^2 &= 100002020010201 + 102010020200001 := 202012040210202 \\
10010101^2 + 10101001^2 &= 100202122030201 + 102030221202001 := 202232343232202 \\
10001101^2 + 10110001^2 &= 100022021212201 + 102212120220001 := 202234141432202 \\
10020101^2 + 10102001^2 &= 100402424050201 + 102050424204001 := 202452848254202
\end{aligned}$$

$$\begin{aligned}
10011101^2 + 10111001^2 &= 100222143232201 + 102232341222001 := 202454484454202 \\
10002101^2 + 10120001^2 &= 100042024414201 + 102414420240001 := 202456444654202 \\
10003101^2 + 10130001^2 &= 100062029616201 + 102616920260001 := 202678949876202 \\
10100101^2 + 10100101^2 &= 102012040210201 + 102012040210201 := 204024080420402 \\
10000201^2 + 10200001^2 &= 100004020040401 + 104040020400001 := 204044040440402 \\
10101101^2 + 10110101^2 &= 102032241412201 + 102214142230201 := 204246383642402 \\
10010201^2 + 10201001^2 &= 100204124060401 + 104060421402001 := 204264545462402 \\
10001201^2 + 10210001^2 &= 100024021442401 + 104244120420001 := 204268141862402 \\
10102101^2 + 10120101^2 &= 102052444614201 + 102416444250201 := 204468888864402 \\
10011201^2 + 10211001^2 &= 100224145462401 + 104264541422001 := 204488686884402 \\
10000301^2 + 10300001^2 &= 100006020090601 + 106090020600001 := 206096040690602 \\
10000011^2 + 11000001^2 &= 100000220000121 + 121000022000001 := 221000242000122 \\
10010011^2 + 11001001^2 &= 100200320220121 + 121022023002001 := 221222343222122 \\
10001011^2 + 11010001^2 &= 100020221022121 + 121220122020001 := 221240343042122 \\
10020011^2 + 11002001^2 &= 100400620440121 + 121044026004001 := 221444646444122 \\
10011011^2 + 11011001^2 &= 100220341242121 + 121242143022001 := 221462484264122 \\
10002011^2 + 11020001^2 &= 100040224044121 + 121440422040001 := 221480646084122 \\
10100011^2 + 11000101^2 &= 102010222200121 + 121002222010201 := 223012444210322 \\
10000111^2 + 11100001^2 &= 100002220012321 + 123210022200001 := 223212242212322 \\
10110011^2 + 11001101^2 &= 102212322420121 + 121024223212201 := 223236545632322 \\
10101011^2 + 11010101^2 &= 102030423222121 + 121222324030201 := 223252747252322 \\
10010111^2 + 11101001^2 &= 100202322232321 + 123232223202001 := 223434545434322 \\
10001111^2 + 11110001^2 &= 100022221234321 + 123432122220001 := 223454343454322 \\
10111011^2 + 11011101^2 &= 102232543442121 + 121244345232201 := 223476888674322 \\
10011111^2 + 11111001^2 &= 100222343454321 + 123454343222001 := 223676686676322 \\
10002111^2 + 11120001^2 &= 100042224456321 + 123654422240001 := 223696646696322 \\
10200011^2 + 11000201^2 &= 104040224400121 + 121004422040401 := 225044646440522 \\
10100111^2 + 11100101^2 &= 102012242212321 + 123212242210201 := 225224484422522 \\
10000211^2 + 11200001^2 &= 100004220044521 + 125440022400001 := 225444242444522 \\
10110111^2 + 11101101^2 &= 102214344432321 + 123234443412201 := 225448787844522 \\
10101111^2 + 11110101^2 &= 102032443434321 + 123434344230201 := 225466787664522 \\
10010211^2 + 11201001^2 &= 100204324264521 + 125462423402001 := 225666747666522 \\
10001211^2 + 11210001^2 &= 100024221466521 + 125664122420001 := 225688343886522 \\
10300011^2 + 11000301^2 &= 106090226600121 + 121006622090601 := 227096848690722 \\
10000311^2 + 11300001^2 &= 100006220096721 + 127690022600001 := 227696242696722 \\
11000011^2 + 11000011^2 &= 121000242000121 + 121000242000121 := 242000484000242 \\
11001011^2 + 11010011^2 &= 121022243022121 + 121220342220121 := 242242585242242 \\
11002011^2 + 11020011^2 &= 121044246044121 + 121440642440121 := 242484888484242
\end{aligned}$$

$$\begin{aligned}
10000021^2 + 12000001^2 &= 100000420000441 + 144000024000001 := 244000444000442 \\
11000111^2 + 11100011^2 &= 121002442012321 + 123210244200121 := 244212686212442 \\
10010021^2 + 12001001^2 &= 100200520420441 + 144024025002001 := 244224545422442 \\
10001021^2 + 12010001^2 &= 100020421042441 + 144240124020001 := 244260545062442 \\
10020021^2 + 12002001^2 &= 100400820840441 + 144048028004001 := 244448848844442 \\
11010111^2 + 11101011^2 &= 121222544232321 + 123232445222121 := 244454989454442 \\
11001111^2 + 11110011^2 &= 121024443234321 + 123432344420121 := 244456787654442 \\
10011021^2 + 12011001^2 &= 100220541462441 + 144264145022001 := 244484686484442 \\
10100021^2 + 12000101^2 &= 102010424200441 + 144002424010201 := 246012848210642 \\
10110021^2 + 12001101^2 &= 102212524620441 + 144026425212201 := 246238949832642 \\
10000121^2 + 12100001^2 &= 100002420014641 + 146410024200001 := 246412444214642 \\
11000211^2 + 11200011^2 &= 121004642044521 + 125440246400121 := 246444888444642 \\
10010121^2 + 12101001^2 &= 100202522434641 + 146434225202001 := 246636747636642 \\
10001121^2 + 12110001^2 &= 100022421256641 + 146652124220001 := 246674545476642 \\
10011121^2 + 12111001^2 &= 100222543676641 + 146676345222001 := 246898888898642 \\
10100121^2 + 12100101^2 &= 102012444214641 + 146412444210201 := 248424888424842 \\
10000221^2 + 12200001^2 &= 100004420048841 + 148840024400001 := 248844444448842 \\
10000031^2 + 13000001^2 &= 100000620000961 + 169000026000001 := 269000646000962 \\
10010031^2 + 13001001^2 &= 100200720620961 + 169026027002001 := 269226747622962 \\
10001031^2 + 13010001^2 &= 100020621062961 + 169260126020001 := 269280747082962 \\
10000002^2 + 20000001^2 &= 100000040000004 + 400000040000001 := 500000080000005 \\
10010002^2 + 20001001^2 &= 100200140040004 + 400040041002001 := 500240181042005 \\
10001002^2 + 20010001^2 &= 100020041004004 + 400400140020001 := 500420181024005 \\
10020002^2 + 20002001^2 &= 100400440080004 + 400080044004001 := 500480484084005 \\
10002002^2 + 20020001^2 &= 100040044008004 + 400800440040001 := 500840484048005 \\
10100002^2 + 20000101^2 &= 102010040400004 + 400004040010201 := 502014080410205 \\
10110002^2 + 20001101^2 &= 102212140440004 + 400044041212201 := 502256181652205 \\
10101002^2 + 20010101^2 &= 102030241404004 + 400404142030201 := 502434383434205 \\
10120002^2 + 20002101^2 &= 102414440480004 + 400084044414201 := 502498484894205 \\
10102002^2 + 20020101^2 &= 102050444408004 + 400804444050201 := 502854888458205 \\
10000102^2 + 20100001^2 &= 100002040010404 + 404010040200001 := 504012080210405 \\
10200002^2 + 20000201^2 &= 104040040800004 + 400008040040401 := 504048080840405 \\
10010102^2 + 20101001^2 &= 100202142050404 + 404050241202001 := 504252383252405 \\
10001102^2 + 20110001^2 &= 100022041214404 + 404412140220001 := 504434181434405 \\
10201002^2 + 20010201^2 &= 104060441804004 + 400408144060401 := 504468585864405 \\
10020102^2 + 20102001^2 &= 100402444090404 + 404090444204001 := 504492888294405 \\
10002102^2 + 20120001^2 &= 100042044418404 + 404814440240001 := 504856484658405 \\
10000202^2 + 20200001^2 &= 100004040040804 + 408040040400001 := 508044080440805
\end{aligned}$$

$$\begin{aligned}
10010202^2 + 20201001^2 &= 100204144080804 + 408080441402001 := 508284585482805 \\
10001202^2 + 20210001^2 &= 100024041444804 + 408444140420001 := 508468181864805 \\
11000002^2 + 20000011^2 &= 121000044000004 + 400000440000121 := 521000484000125 \\
11010002^2 + 20001011^2 &= 121220144040004 + 400040441022121 := 521260585062125 \\
11001002^2 + 20010011^2 &= 121022045004004 + 400400540220121 := 521422585224125 \\
11002002^2 + 20020011^2 &= 121044048008004 + 400800840440121 := 521844888448125 \\
11100002^2 + 20000111^2 &= 123210044400004 + 400004440012321 := 523214484412325 \\
11110002^2 + 20001111^2 &= 123432144440004 + 400044441234321 := 523476585674325 \\
11101002^2 + 20010111^2 &= 123232245404004 + 400404542232321 := 523636787636325 \\
11000102^2 + 20100011^2 &= 121002244010404 + 404010442200121 := 525012686210525 \\
11010102^2 + 20101011^2 &= 121222346050404 + 404050643222121 := 525272989272525 \\
11001102^2 + 20110011^2 &= 121024245214404 + 404412542420121 := 525436787634525 \\
11200002^2 + 20000211^2 &= 125440044800004 + 400008440044521 := 525448484844525 \\
11000202^2 + 20200011^2 &= 121004444040804 + 408040444400121 := 529044888440925 \\
10000012^2 + 21000001^2 &= 100000240000144 + 441000042000001 := 541000282000145 \\
10010012^2 + 21001001^2 &= 100200340240144 + 441042043002001 := 541242383242145 \\
10001012^2 + 21010001^2 &= 100020241024144 + 441420142020001 := 541440383044145 \\
10020012^2 + 21002001^2 &= 100400640480144 + 441084046004001 := 541484686484145 \\
10002012^2 + 21020001^2 &= 100040244048144 + 441840442040001 := 541880686088145 \\
10100012^2 + 21000101^2 &= 102010242400144 + 441004242010201 := 543014484410345 \\
10110012^2 + 21001101^2 &= 102212342640144 + 441046243212201 := 543258585852345 \\
10101012^2 + 21010101^2 &= 102030443424144 + 441424344030201 := 543454787454345 \\
12000002^2 + 20000021^2 &= 144000048000004 + 400000840000441 := 544000888000445 \\
12010002^2 + 20001021^2 &= 144240148040004 + 400040841042441 := 544280989082445 \\
12001002^2 + 20010021^2 &= 144024049004004 + 400400940420441 := 544424989424445 \\
10200012^2 + 21000201^2 &= 104040244800144 + 441008442040401 := 545048686840545 \\
10000112^2 + 21100001^2 &= 100002240012544 + 445210042200001 := 545212282212545 \\
10010112^2 + 21101001^2 &= 100202342252544 + 445252243202001 := 545454585454545 \\
10001112^2 + 21110001^2 &= 100022241236544 + 445632142220001 := 545654383456545 \\
12100002^2 + 20000121^2 &= 146410048400004 + 400004840014641 := 546414888414645 \\
12110002^2 + 20001121^2 &= 146652148440004 + 400044841256641 := 546696989696645 \\
12200002^2 + 20000221^2 &= 148840048800004 + 400008840048841 := 548848888848845 \\
10000212^2 + 21200001^2 &= 100004240044944 + 449440042400001 := 549444282444945 \\
10010212^2 + 21201001^2 &= 100204344284944 + 449482443402001 := 549686787686945 \\
10001212^2 + 21210001^2 &= 100024241468944 + 449864142420001 := 549888383888945 \\
10000022^2 + 22000001^2 &= 100000440000484 + 484000044000001 := 584000484000485 \\
10010022^2 + 22001001^2 &= 100200540440484 + 484044045002001 := 584244585442485 \\
10001022^2 + 22010001^2 &= 100020441044484 + 484440144020001 := 584460585064485
\end{aligned}$$

$$\begin{aligned}
10020022^2 + 22002001^2 &= 100400840880484 + 484088048004001 := 584488888884485 \\
10100022^2 + 22000101^2 &= 102010444400484 + 484004444010201 := 586014888410685 \\
10000122^2 + 22100001^2 &= 100002440014884 + 488410044200001 := 588412484214885 \\
10010122^2 + 22101001^2 &= 100202542454884 + 488454245202001 := 588656787656885 \\
10001122^2 + 22110001^2 &= 100022441258884 + 488852144220001 := 588874585478885
\end{aligned}$$

• Non-Palindromic Sum

$$\begin{aligned}
10012001^2 + 10021001^2 &= 100240164024001 + 100420461042001 := 200660625066002 \\
10013001^2 + 10031001^2 &= 100260189026001 + 100620981062001 := 200881170088002 \\
10030101^2 + 10103001^2 &= 100602926070201 + 102070629206001 := 202673555276202 \\
10021101^2 + 10112001^2 &= 100422465252201 + 102252564224001 := 202675029476202 \\
10012101^2 + 10121001^2 &= 100242166434201 + 102434661242001 := 202676827676202 \\
10031101^2 + 10113001^2 &= 100622987272201 + 102272789226001 := 202895776498202 \\
10111101^2 + 10111101^2 &= 102234363432201 + 102234363432201 := 204468726864402 \\
10020201^2 + 10202001^2 &= 100404428080401 + 104080824404001 := 204485252484402 \\
10002201^2 + 10220001^2 &= 100044024844401 + 104448420440001 := 204492445284402 \\
10112101^2 + 10121101^2 &= 102254586634201 + 102436685452201 := 204691272086402 \\
10103101^2 + 10130101^2 &= 102072649816201 + 102618946270201 := 204691596086402 \\
10021201^2 + 10212001^2 &= 100424469482401 + 104284964424001 := 204709433906402 \\
10012201^2 + 10221001^2 &= 100244168864401 + 104468861442001 := 204713030306402 \\
10100201^2 + 10200101^2 &= 102014060240401 + 104042060410201 := 206056120650602 \\
10110201^2 + 10201101^2 &= 102216164260401 + 104062461612201 := 206278625872602 \\
10101201^2 + 10210101^2 &= 102034261642401 + 104246162430201 := 206280424072602 \\
10001301^2 + 10310001^2 &= 100026021692601 + 106296120620001 := 206322142312602 \\
10120201^2 + 10202101^2 &= 102418468280401 + 104082864814201 := 206501333094602 \\
10111201^2 + 10211101^2 &= 102236385662401 + 104266583632201 := 206502969294602 \\
10100301^2 + 10300101^2 &= 102016080290601 + 106092080610201 := 208108160900802 \\
10101301^2 + 10310101^2 &= 102036281892601 + 106298182630201 := 208334464522802 \\
10021011^2 + 11012001^2 &= 100420661462121 + 121264166024001 := 221684827486122 \\
10012011^2 + 11021001^2 &= 100240364264121 + 121462463042001 := 221702827306122 \\
10003011^2 + 11030001^2 &= 100060229066121 + 121660922060001 := 221721151126122 \\
10013011^2 + 11031001^2 &= 100260389286121 + 121682983062001 := 221943372348122 \\
10120011^2 + 11002101^2 &= 102414622640121 + 121046226414201 := 223460849054322 \\
10102011^2 + 11020101^2 &= 102050626244121 + 121442626050201 := 223493252294322 \\
10020111^2 + 11102001^2 &= 100402624452321 + 123254426204001 := 223657050656322 \\
10121011^2 + 11012101^2 &= 102434863662121 + 121266368434201 := 223701232096322 \\
10112011^2 + 11021101^2 &= 102252766464121 + 121464667252201 := 223717433716322
\end{aligned}$$

$$\begin{aligned}
10021111^2 + 11112001^2 &= 100422665674321 + 123476566224001 := 223899231898322 \\
10012111^2 + 11121001^2 &= 100242366676321 + 123676663242001 := 223919029918322 \\
10003111^2 + 11130001^2 &= 100062229678321 + 123876922260001 := 223939151938322 \\
10210011^2 + 11001201^2 &= 104244324620121 + 121026423442401 := 225270748062522 \\
10201011^2 + 11010201^2 &= 104060625422121 + 121224526060401 := 225285151482522 \\
10220011^2 + 11002201^2 &= 104448624840121 + 121048426844401 := 225497051684522 \\
10211011^2 + 11011201^2 &= 104264745642121 + 121246547462401 := 225511293104522 \\
10120111^2 + 11102101^2 &= 102416646652321 + 123256646614201 := 225673293266522 \\
10111111^2 + 11111101^2 &= 102234565654321 + 123456565432201 := 225691131086522 \\
10102111^2 + 11120101^2 &= 102052646656321 + 123656646250201 := 225709292906522 \\
10020211^2 + 11202001^2 &= 100404628484521 + 125484826404001 := 225889454888522 \\
10011211^2 + 11211001^2 &= 100224345686521 + 125686543422001 := 225910889108522 \\
10121111^2 + 11112101^2 &= 102436887874321 + 123478788634201 := 225915676508522 \\
10002211^2 + 11220001^2 &= 100044224888521 + 125888422440001 := 225932647328522 \\
10112111^2 + 11121101^2 &= 102254788876321 + 123678887452201 := 225933676328522 \\
10200111^2 + 11100201^2 &= 104042264412321 + 123214462240401 := 227256726652722 \\
10310011^2 + 11001301^2 &= 106296326820121 + 121028623692601 := 227324950512722 \\
10100211^2 + 11200101^2 &= 102014262244521 + 125442262410201 := 227456524654722 \\
10210111^2 + 11101201^2 &= 104246366632321 + 123236663642401 := 227483030274722 \\
10201111^2 + 11110201^2 &= 104062665634321 + 123436566260401 := 227499231894722 \\
10110211^2 + 11201101^2 &= 102216366464521 + 125464663612201 := 227681030076722 \\
10101211^2 + 11210101^2 &= 102034463666521 + 125666364430201 := 227700828096722 \\
10211111^2 + 11111201^2 &= 104266787854321 + 123458787662401 := 227725575516722 \\
10111211^2 + 11211101^2 &= 102236587886521 + 125688785632201 := 227925373518722 \\
10300111^2 + 11100301^2 &= 106092286612321 + 123216682290601 := 229308968902922 \\
10310111^2 + 11101301^2 &= 106298388832321 + 123238883892601 := 229537272724922 \\
10100311^2 + 11300101^2 &= 102016282296721 + 127692282610201 := 229708564906922 \\
11011011^2 + 11011011^2 &= 121242363242121 + 121242363242121 := 242484726484242 \\
11012011^2 + 11021011^2 &= 121264386264121 + 121462683462121 := 242727069726242 \\
10002021^2 + 12020001^2 &= 100040424084441 + 144480424040001 := 244520848124442 \\
11020111^2 + 11102011^2 &= 121442846452321 + 123254648244121 := 244697494696442 \\
11011111^2 + 11111011^2 &= 121244565454321 + 123454565442121 := 244699130896442 \\
11002111^2 + 11120011^2 &= 121046446456321 + 123654644640121 := 244701091096442 \\
10021021^2 + 12012001^2 &= 100420861882441 + 144288168024001 := 244709029906442 \\
11021111^2 + 11112011^2 &= 121464887674321 + 123476788464121 := 244941676138442 \\
11012111^2 + 11121011^2 &= 121266588676321 + 123676885662121 := 244943474338442 \\
10101021^2 + 12010101^2 &= 102030625242441 + 144242526030201 := 246273151272642 \\
11100111^2 + 11100111^2 &= 123212464212321 + 123212464212321 := 246424928424642
\end{aligned}$$



$$\begin{aligned}
10111021^2 + 12011101^2 &= 102232745662441 + 144266547232201 := 246499292894642 \\
10102021^2 + 12020101^2 &= 102050828284441 + 144482828050201 := 246533656334642 \\
11101111^2 + 11110111^2 &= 123234665434321 + 123434566432321 := 246669231866642 \\
11010211^2 + 11201011^2 &= 121224746264521 + 125462647422121 := 246687393686642 \\
11001211^2 + 11210011^2 &= 121026643466521 + 125664346620121 := 246690990086642 \\
10020121^2 + 12102001^2 &= 100402824854641 + 146458428204001 := 246861253058642 \\
11111111^2 + 11111111^2 &= 123456787654321 + 123456787654321 := 246913575308642 \\
11102111^2 + 11120111^2 &= 123256868656321 + 123656868652321 := 246913737308642 \\
11011211^2 + 11211011^2 &= 121246767686521 + 125686767642121 := 246933535328642 \\
10002121^2 + 12120001^2 &= 100042424498641 + 146894424240001 := 246936848738642 \\
11002211^2 + 11220011^2 &= 121048646888521 + 125888646840121 := 246937293728642 \\
10200021^2 + 12000201^2 &= 104040428400441 + 144004824040401 := 248045252440842 \\
10210021^2 + 12001201^2 &= 104244528820441 + 144028825442401 := 248273354262842 \\
10201021^2 + 12010201^2 &= 104060829442441 + 144244928060401 := 248305757502842 \\
10211021^2 + 12011201^2 &= 104264949862441 + 144268949462401 := 248533899324842 \\
10110121^2 + 12101101^2 &= 102214546634641 + 146436645412201 := 248651192046842 \\
11100211^2 + 11200111^2 &= 123214684244521 + 125442486412321 := 248657170656842 \\
10101121^2 + 12110101^2 &= 102032645456641 + 146654546230201 := 248687191686842 \\
11000311^2 + 11300011^2 &= 121006842096721 + 127690248600121 := 248697090696842 \\
11110211^2 + 11201111^2 &= 123436788464521 + 125464887634321 := 248901676098842 \\
11101211^2 + 11210111^2 &= 123236885666521 + 125666588632321 := 248903474298842 \\
10111121^2 + 12111101^2 &= 102234767876641 + 146678767432201 := 248913535308842 \\
10102121^2 + 12120101^2 &= 102052848698641 + 146896848250201 := 248949696948842 \\
10010221^2 + 12201001^2 &= 100204524468841 + 148864425402001 := 249068949870842 \\
10020221^2 + 12202001^2 &= 100404828888841 + 148888828404001 := 249293657292842 \\
10200121^2 + 12100201^2 &= 104042468414641 + 146414864240401 := 250457332655042 \\
10201121^2 + 12110201^2 &= 104062869656641 + 146656968260401 := 250719837917042 \\
10100221^2 + 12200101^2 &= 102014464248841 + 148842464410201 := 250856928659042 \\
10110221^2 + 12201101^2 &= 102216568668841 + 148866865612201 := 251083434281042 \\
11000021^2 + 12000011^2 &= 121000462000441 + 144000264000121 := 265000726000562 \\
11010021^2 + 12001011^2 &= 121220562420441 + 144024265022121 := 265244827442562 \\
11001021^2 + 12010011^2 &= 121022463042441 + 144240364220121 := 265262827262562 \\
11020021^2 + 12002011^2 &= 121440862840441 + 144048268044121 := 265489130884562 \\
11011021^2 + 12011011^2 &= 121242583462441 + 144264385242121 := 265506968704562 \\
11002021^2 + 12020011^2 &= 121044466084441 + 144480664440121 := 265525130524562 \\
11100021^2 + 12000111^2 &= 123210466200441 + 144002664012321 := 267213130212762 \\
11000121^2 + 12100011^2 &= 121002662014641 + 146410266200121 := 267412928214762 \\
11110021^2 + 12001111^2 &= 123432566620441 + 144026665234321 := 267459231854762
\end{aligned}$$



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11101021^2 + 12010111^2 &= 123232667242441 + 144242766232321 := 267475433474762 \\
11010121^2 + 12101011^2 &= 121222764434641 + 146434467222121 := 267657231656762 \\
11001121^2 + 12110011^2 &= 121024663256641 + 146652366420121 := 267677029676762 \\
11111021^2 + 12011111^2 &= 123454787662441 + 144266787454321 := 267721575116762 \\
11011121^2 + 12111011^2 &= 121244785676641 + 146676587442121 := 267921373118762 \\
11002121^2 + 12120011^2 &= 121046666498641 + 146894666640121 := 267941333138762 \\
10011031^2 + 13011001^2 &= 100220741682961 + 169286147022001 := 269506888704962 \\
11100121^2 + 12100111^2 &= 123212686214641 + 146412686212321 := 269625372426962 \\
11000221^2 + 12200011^2 &= 121004862048841 + 148840268400121 := 269845130448962 \\
11110121^2 + 12101111^2 &= 123434788634641 + 146436887434321 := 269871676068962 \\
11101121^2 + 12110111^2 &= 123234887456641 + 146654788432321 := 269889675888962 \\
11010221^2 + 12201011^2 &= 121224966468841 + 148864669422121 := 270089635890962 \\
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10110031^2 + 13001101^2 &= 102212726820961 + 169028627212201 := 271241354033162 \\
10101031^2 + 13010101^2 &= 102030827262961 + 169262728030201 := 271293555293162 \\
10111031^2 + 13011101^2 &= 102232947882961 + 169288749232201 := 271521697115162 \\
11000031^2 + 13000011^2 &= 121000682000961 + 169000286000121 := 290000968001082 \\
11010031^2 + 13001011^2 &= 121220782620961 + 169026287022121 := 290247069643082 \\
11001031^2 + 13010011^2 &= 121022683062961 + 169260386220121 := 290283069283082 \\
11100031^2 + 13000111^2 &= 123210688200961 + 169002886012321 := 292213574213282 \\
11110031^2 + 13001111^2 &= 123432788820961 + 169028887234321 := 292461676055282 \\
11101031^2 + 13010111^2 &= 123232889262961 + 169262988232321 := 292495877495282 \\
10011002^2 + 20011001^2 &= 100220161044004 + 400440161022001 := 500660322066005 \\
10021002^2 + 20012001^2 &= 100420481084004 + 400480184024001 := 500900665108005 \\
10012002^2 + 20021001^2 &= 100240184048004 + 400840481042001 := 501080665090005 \\
10111002^2 + 20011101^2 &= 102232361444004 + 400444163232201 := 502676524676205 \\
10121002^2 + 20012101^2 &= 102434681484004 + 400484186434201 := 502918867918205 \\
10112002^2 + 20021101^2 &= 102252584448004 + 400844485252201 := 503097069700205 \\
10210002^2 + 20001201^2 &= 104244140840004 + 400048041442401 := 504292182282405 \\
10220002^2 + 20002201^2 &= 104448440880004 + 400088044844401 := 504536485724405 \\
10011102^2 + 20111001^2 &= 100222163254404 + 404452361222001 := 504674524476405 \\
10211002^2 + 20011201^2 &= 104264561844004 + 400448165462401 := 504712727306405 \\
10202002^2 + 20020201^2 &= 104080844808004 + 400808448080401 := 504889292888405 \\
10021102^2 + 20112001^2 &= 100422485294404 + 404492584224001 := 504915069518405 \\
10221002^2 + 20012201^2 &= 104468881884004 + 400488188864401 := 504957070748405 \\
10012102^2 + 20121001^2 &= 100242186458404 + 404854681242001 := 505096867700405 \\
10212002^2 + 20021201^2 &= 104284984848004 + 400848489482401 := 505133474330405 \\
10100102^2 + 20100101^2 &= 102012060410404 + 404014060210201 := 506026120620605
\end{aligned}$$

$$\begin{aligned}
10110102^2 + 20101101^2 &= 102214162450404 + 404054261412201 := 506268423862605 \\
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10111102^2 + 20111101^2 &= 102234383654404 + 404456383432201 := 506690767086605 \\
10102102^2 + 20120101^2 &= 102052464818404 + 404818464250201 := 506870929068605 \\
10200102^2 + 20100201^2 &= 104042080810404 + 404018080240401 := 508060161050805 \\
10210102^2 + 20101201^2 &= 104246182850404 + 404058281642401 := 508304464492805 \\
10011202^2 + 20211001^2 &= 100224165484804 + 408484561422001 := 508708726906805 \\
10002202^2 + 20220001^2 &= 100044044848804 + 408848440440001 := 508892485288805 \\
10012202^2 + 20221001^2 &= 100244188888804 + 408888881442001 := 509133070330805 \\
10100202^2 + 20200101^2 &= 102014080440804 + 408044080410201 := 510058160851005 \\
10110202^2 + 20201101^2 &= 102216184480804 + 408084481612201 := 510300666093005 \\
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11020102^2 + 20102011^2 &= 121442648090404 + 404090846244121 := 525533494334525 \\
11011102^2 + 20111011^2 &= 121244367254404 + 404452763442121 := 525697130696525 \\
11210002^2 + 20001211^2 &= 125664144840004 + 400048441466521 := 525712586306525 \\
11002102^2 + 20120011^2 &= 121046248418404 + 404814842640121 := 525861091058525 \\
11201002^2 + 20010211^2 &= 125462445804004 + 400408544264521 := 525870990068525 \\
11021102^2 + 20112011^2 &= 121464689294404 + 404492986464121 := 525957675758525 \\
11220002^2 + 20002211^2 &= 125888444880004 + 400088444888521 := 525976889768525 \\
11211002^2 + 20011211^2 &= 125686565844004 + 400448565686521 := 526135131530525 \\
11202002^2 + 20020211^2 &= 125484848808004 + 400808848484521 := 526293697292525 \\
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11110102^2 + 20101111^2 &= 123434366450404 + 404054663434321 := 527489029884725 \\
11101102^2 + 20110111^2 &= 123234465614404 + 404416564432321 := 527651030046725 \\
11120102^2 + 20102111^2 &= 123656668490404 + 404094866656321 := 527751535146725 \\
11111102^2 + 20111111^2 &= 123456587654404 + 404456785654321 := 527913373308725 \\
11102102^2 + 20120111^2 &= 123256668818404 + 404818866652321 := 528075535470725 \\
11010202^2 + 20201011^2 &= 121224548080804 + 408080845422121 := 529305393502925
\end{aligned}$$

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11011202^2 + 20211011^2 &= 121246569484804 + 408484965642121 := 529731535126925 \\
11002202^2 + 20220011^2 &= 121048448848804 + 408848844840121 := 529897293688925 \\
11100202^2 + 20200111^2 &= 123214484440804 + 408044484412321 := 531258968853125 \\
11110202^2 + 20201111^2 &= 123436588480804 + 408084885634321 := 531521474115125 \\
11101202^2 + 20210111^2 &= 123236685844804 + 408448586632321 := 531685272477125 \\
10011012^2 + 21011001^2 &= 100220361264144 + 441462163022001 := 541682524286145 \\
10012012^2 + 21021001^2 &= 100240384288144 + 441882483042001 := 542122867330145 \\
10120012^2 + 21002101^2 &= 102414642880144 + 441088246414201 := 543502889294345 \\
10111012^2 + 21011101^2 &= 102232563664144 + 441466365232201 := 543698928896345 \\
10102012^2 + 21020101^2 &= 102050646448144 + 441844646050201 := 543895292498345 \\
10112012^2 + 21021101^2 &= 102252786688144 + 441886687252201 := 544139473940345 \\
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12201002^2 + 20010221^2 &= 148864449804004 + 400408944468841 := 549273394272845 \\
12100102^2 + 20100121^2 &= 146412468410404 + 404014864214641 := 550427332625045 \\
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12000202^2 + 20200021^2 &= 144004848040804 + 408040848400441 := 552045696441245 \\
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11000012^2 + 21000011^2 &= 121000264000144 + 441000462000121 := 562000726000265 \\
11010012^2 + 21001011^2 &= 121220364240144 + 441042463022121 := 562262827262265 \\
11001012^2 + 21010011^2 &= 121022265024144 + 441420562220121 := 562442827244265 \\
11020012^2 + 21002011^2 &= 121440664480144 + 441084466044121 := 562525130524265 \\
11011012^2 + 21011011^2 &= 121242385264144 + 441462583242121 := 562704968506265 \\
11002012^2 + 21020011^2 &= 121044268048144 + 441840862440121 := 562885130488265 \\
11100012^2 + 21000111^2 &= 123210266400144 + 441004662012321 := 564214928412465 \\
11110012^2 + 21001111^2 &= 123432366640144 + 441046663234321 := 564479029874465 \\
11101012^2 + 21010111^2 &= 123232467424144 + 441424764232321 := 564657231656465 \\
11120012^2 + 21002111^2 &= 123654666880144 + 441088666456321 := 564743333336465 \\
11111012^2 + 21011111^2 &= 123454587664144 + 441466785454321 := 564921373118465 \\
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11200012^2 + 21000211^2 &= 125440268800144 + 441008862044521 := 566449130844665 \\
11010112^2 + 21101011^2 &= 121222566252544 + 445252665222121 := 566475231474665 \\
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11201012^2 + 21010211^2 &= 125462669824144 + 441428966264521 := 566891636088665 \\
11011112^2 + 21111011^2 &= 121244587476544 + 445674785442121 := 566919372918665 \\
11100112^2 + 21100111^2 &= 123212486412544 + 445214684212321 := 568427170624865 \\
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11101112^2 + 21110111^2 &= 123234687636544 + 445636786432321 := 568871474068865 \\
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10011022^2 + 22011001^2 &= 100220561484484 + 484484165022001 := 584704726506485 \\
10002022^2 + 22020001^2 &= 100040444088484 + 484880444040001 := 584920888128485 \\
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12010012^2 + 21001021^2 &= 144240388240144 + 441042883042441 := 585283271282585 \\
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10200022^2 + 22000201^2 &= 104040448800484 + 484008844040401 := 588049292840885 \\
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\end{aligned}$$

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10020122^2 + 22102001^2 &= 100402844894884 + 488498448204001 := 588901293098885 \\
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12001112^2 + 21110021^2 &= 144026689236544 + 445632986620441 := 589659675856985 \\
10100122^2 + 22100101^2 &= 102012464414884 + 488414464210201 := 590426928625085 \\
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10200122^2 + 22100201^2 &= 104042488814884 + 488418884240401 := 592461373055285 \\
11000022^2 + 22000011^2 &= 121000484000484 + 484000484000121 := 605000968000605 \\
11010022^2 + 22001011^2 &= 121220584440484 + 484044485022121 := 605265069462605 \\
11001022^2 + 22010011^2 &= 121022485044484 + 484440584220121 := 605463069264605 \\
11020022^2 + 22002011^2 &= 121440884880484 + 484088488044121 := 605529372924605 \\
11002022^2 + 22020011^2 &= 121044488088484 + 484880884440121 := 605925372528605 \\
11100022^2 + 22000111^2 &= 123210488400484 + 484004884012321 := 607215372412805 \\
11110022^2 + 22001111^2 &= 123432588840484 + 484048885234321 := 607481474074805 \\
11101022^2 + 22010111^2 &= 123232689444484 + 484444986232321 := 607677675676805 \\
11000122^2 + 22100011^2 &= 121002684014884 + 488410486200121 := 609413170215005 \\
11010122^2 + 22101011^2 &= 121222786454884 + 488454687222121 := 609677473677005 \\
11001122^2 + 22110011^2 &= 121024685258884 + 488852586420121 := 609877271679005 \\
20000002^2 + 20000002^2 &= 400000080000004 + 400000080000004 := 800000160000008 \\
20001002^2 + 20010002^2 &= 400040081004004 + 400400180040004 := 800440261044008 \\
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20000102^2 + 20100002^2 &= 400004080010404 + 404010080400004 := 804014160410408 \\
20010102^2 + 20101002^2 &= 400404182050404 + 404050281404004 := 804454463454408 \\
20001102^2 + 20110002^2 &= 400044081214404 + 404412180440004 := 804456261654408 \\
20020102^2 + 20102002^2 &= 400804484090404 + 404090484408004 := 804894968498408 \\
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20002202^2 + 20220002^2 &= 400088084848804 + 408848480880004 := 808936565728808 \\
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20020012^2 + 21002002^2 &= 400800880480144 + 441084088008004 := 841884968488148 \\
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20100012^2 + 21000102^2 &= 404010482400144 + 441004284010404 := 845014766410548 \\
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\end{aligned}$$

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20010112^2 + 21101002^2 &= 400404582252544 + 445252285404004 := 845656867656548 \\
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20020112^2 + 21102002^2 &= 400804884492544 + 445294488408004 := 846099372900548 \\
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20000212^2 + 21200002^2 &= 400008480044944 + 449440084800004 := 849448564844948 \\
20201012^2 + 21010202^2 &= 408080885824144 + 441428588080804 := 849509473904948 \\
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20001212^2 + 21210002^2 &= 400048481468944 + 449864184840004 := 849912666308948 \\
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20010022^2 + 22001002^2 &= 400400980440484 + 484044089004004 := 884445069444488 \\
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20100022^2 + 22000102^2 &= 404010884400484 + 484004488010404 := 888015372410888 \\
20000122^2 + 22100002^2 &= 400004880014884 + 488410088400004 := 888414968414888 \\
20110022^2 + 22001102^2 &= 404412984840484 + 484048489214404 := 888461474054888 \\
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20001122^2 + 22110002^2 &= 400044881258884 + 488852188440004 := 888897069698888 \\
20200022^2 + 22000202^2 &= 408040888800484 + 484008888040804 := 892049776841288 \\
10000003^2 + 30000001^2 &= 100000060000009 + 900000060000001 := 1000000120000010 \\
10010003^2 + 30001001^2 &= 100200160060009 + 900060061002001 := 1000260221062010 \\
10001003^2 + 30010001^2 &= 100020061006009 + 900600160020001 := 1000620221026010 \\
10011003^2 + 30011001^2 &= 100220181066009 + 900660181022001 := 1000880362088010 \\
10100003^2 + 30000101^2 &= 102010060600009 + 900006060010201 := 1002016120610210 \\
10110003^2 + 30001101^2 &= 102212160660009 + 900066061212201 := 1002278221872210 \\
10101003^2 + 30010101^2 &= 102030261606009 + 900606162030201 := 1002636423636210 \\
10111003^2 + 30011101^2 &= 102232381666009 + 900666183232201 := 1002898564898210 \\
10000103^2 + 30100001^2 &= 100002060010609 + 906010060200001 := 1006012120210610 \\
10010103^2 + 30101001^2 &= 100202162070609 + 906070261202001 := 1006272423272610 \\
10001103^2 + 30110001^2 &= 100022061216609 + 906612160220001 := 1006634221436610 \\
10011103^2 + 30111001^2 &= 100222183276609 + 906672381222001 := 1006894564498610 \\
10100103^2 + 30100101^2 &= 102012080610609 + 906016080210201 := 1008028160820810 \\
10110103^2 + 30101101^2 &= 102214182670609 + 906076281412201 := 1008290464082810 \\
10101103^2 + 30110101^2 &= 102032281816609 + 906618182230201 := 1008650464046810 \\
11000003^2 + 30000011^2 &= 121000066000009 + 900000660000121 := 1021000726000130
\end{aligned}$$

$$\begin{aligned}
11010003^2 + 30001011^2 &= 121220166060009 + 900060661022121 := 1021280827082130 \\
11001003^2 + 30010011^2 &= 121022067006009 + 900600760220121 := 1021622827226130 \\
11011003^2 + 30011011^2 &= 121242187066009 + 900660781242121 := 1021902968308130 \\
11100003^2 + 30000111^2 &= 123210066600009 + 900006660012321 := 1023216726612330 \\
11110003^2 + 30001111^2 &= 123432166660009 + 900066661234321 := 1023498827894330 \\
11101003^2 + 30010111^2 &= 123232267606009 + 900606762232321 := 1023839029838330 \\
11111003^2 + 30011111^2 &= 123454387666009 + 900666783454321 := 1024121171120330 \\
11000103^2 + 30100011^2 &= 121002266010609 + 906010662200121 := 1027012928210730 \\
11010103^2 + 30101011^2 &= 121222368070609 + 906070863222121 := 1027293231292730 \\
11001103^2 + 30110011^2 &= 121024267216609 + 906612762420121 := 1027637029636730 \\
11011103^2 + 30111011^2 &= 121244389276609 + 906672983442121 := 1027917372718730 \\
11100103^2 + 30100111^2 &= 123212286610609 + 906016682212321 := 1029228968822930 \\
11110103^2 + 30101111^2 &= 123434388670609 + 906076883434321 := 1029511272104930 \\
11101103^2 + 30110111^2 &= 123234487816609 + 906618784432321 := 1029853272248930 \\
10000013^2 + 31000001^2 &= 100000260000169 + 961000062000001 := 1061000322000170 \\
10010013^2 + 31001001^2 &= 100200360260169 + 961062063002001 := 1061262423262170 \\
10001013^2 + 31010001^2 &= 100020261026169 + 961620162020001 := 1061640423046170 \\
10011013^2 + 31011001^2 &= 100220381286169 + 961682183022001 := 1061902564308170 \\
10100013^2 + 31000101^2 &= 102010262600169 + 961006262010201 := 1063016524610370 \\
10110013^2 + 31001101^2 &= 102212362860169 + 961068263212201 := 1063280626072370 \\
10101013^2 + 31010101^2 &= 102030463626169 + 961626364030201 := 1063656827656370 \\
10111013^2 + 31011101^2 &= 102232583886169 + 961688385232201 := 1063920969118370 \\
10000113^2 + 31100001^2 &= 100002260012769 + 967210062200001 := 1067212322212770 \\
10010113^2 + 31101001^2 &= 100202362272769 + 967272263202001 := 1067474625474770 \\
10001113^2 + 31110001^2 &= 100022261238769 + 967832162220001 := 1067854423458770 \\
10011113^2 + 31111001^2 &= 100222383498769 + 967894383222001 := 1068116766720770 \\
10100113^2 + 31100101^2 &= 102012282612769 + 967216282210201 := 1069228564822970 \\
10110113^2 + 31101101^2 &= 102214384872769 + 967278483412201 := 1069492868284970 \\
10101113^2 + 31110101^2 &= 102032483838769 + 967838384230201 := 1069870868068970 \\
11000013^2 + 31000011^2 &= 121000286000169 + 961000682000121 := 1082000968000290 \\
11010013^2 + 31001011^2 &= 121220386260169 + 961062683022121 := 1082283069282290 \\
11001013^2 + 31010011^2 &= 121022287026169 + 961620782220121 := 1082643069246290 \\
11100013^2 + 31000111^2 &= 123210288600169 + 961006882012321 := 1084217170612490 \\
11110013^2 + 31001111^2 &= 123432388860169 + 961068883234321 := 1084501272094490 \\
11101013^2 + 31010111^2 &= 123232489626169 + 961626984232321 := 1084859473858490 \\
11000113^2 + 31100011^2 &= 121002486012769 + 967210684200121 := 1088213170212890 \\
11010113^2 + 31101011^2 &= 121222588272769 + 967272885222121 := 1088495473494890 \\
11001113^2 + 31110011^2 &= 121024487238769 + 967832784420121 := 1088857271658890
\end{aligned}$$



## 2.9 Nine Digits Expressions

This section brings **palindromic-type squared expressions** having nine digits. Final sums palindromic and non-palindromic are given in separately.

### • Palindromic Sum

$$\begin{aligned}
 10000001^2 + 10000001^2 &= 10000000200000001 + 10000000200000001 := 20000000400000002 \\
 100010001^2 + 100010001^2 &= 10002000300020001 + 10002000300020001 := 20004000600040002 \\
 100001001^2 + 100100001^2 &= 10000200201002001 + 10020010200200001 := 20020210401202002 \\
 100011001^2 + 100110001^2 &= 10002200321022001 + 10022012300220001 := 20024212621242002 \\
 100101001^2 + 100101001^2 &= 10020210401202001 + 10020210401202001 := 20040420802404002 \\
 100002001^2 + 100200001^2 &= 10000400204004001 + 10040040200400001 := 20040440404404002 \\
 100012001^2 + 100210001^2 &= 10002400344024001 + 10042044300420001 := 20044444644444002 \\
 100003001^2 + 100300001^2 &= 10000600209006001 + 10060090200600001 := 20060690409606002 \\
 100013001^2 + 100310001^2 &= 10002600369026001 + 10062096300620001 := 20064696669646002 \\
 100000101^2 + 101000001^2 &= 10000020200010201 + 10201000202000001 := 20201020402010202 \\
 100010101^2 + 101010001^2 &= 10002020302030201 + 10203020302020001 := 20205040604050202 \\
 100100101^2 + 101001001^2 &= 10020030220210201 + 10201202203002001 := 20221232423212202 \\
 100001101^2 + 101100001^2 &= 10000220201212201 + 10221210202200001 := 20221430403412202 \\
 100110101^2 + 101011001^2 &= 10022032322230201 + 10203222323022001 := 20225254645252202 \\
 100011101^2 + 101110001^2 &= 10002220323232201 + 10223232302220001 := 20225452625452202 \\
 100200101^2 + 101002001^2 &= 10040060240410201 + 10201404206004001 := 20241464446414202 \\
 100101101^2 + 101101001^2 &= 10020230421412201 + 10221412403202001 := 20241642824614202 \\
 100002101^2 + 101200001^2 &= 10000420204414201 + 10241440202400001 := 20241860406814202 \\
 100210101^2 + 101012001^2 &= 10042064342430201 + 10203424346024001 := 20245488688454202 \\
 100012101^2 + 101210001^2 &= 10002420346434201 + 10243464302420001 := 20245884648854202 \\
 101000101^2 + 101000101^2 &= 10201020402010201 + 10201020402010201 := 20402040804020402 \\
 100000201^2 + 102000001^2 &= 10000040200040401 + 10404000204000001 := 20404040404040402 \\
 100010201^2 + 102010001^2 &= 10002040304060401 + 10406040304020001 := 20408080608080402 \\
 101001101^2 + 101100101^2 &= 10201222403212201 + 10221230422210201 := 20422452825422402 \\
 100100201^2 + 102001001^2 &= 10020050240240401 + 10404204205002001 := 20424254445242402 \\
 100001201^2 + 102100001^2 &= 10000240201442401 + 10424410204200001 := 20424650405642402 \\
 100110201^2 + 102011001^2 &= 10022052344260401 + 10406244325022001 := 20428296669282402 \\
 100011201^2 + 102110001^2 &= 10002240325462401 + 10426452304220001 := 20428692629682402 \\
 101002101^2 + 101200101^2 &= 10201424406414201 + 10241460442410201 := 20442884848824402 \\
 100200201^2 + 102002001^2 &= 10040080280440401 + 10404408208004001 := 20444488488444402
 \end{aligned}$$



$$\begin{aligned}
100101201^2 + 102101001^2 &= 10020250441642401 + 10424614405202001 := 20444864846844402 \\
100000301^2 + 103000001^2 &= 10000060200090601 + 10609000206000001 := 20609060406090602 \\
100100301^2 + 103001001^2 &= 10020070260290601 + 10609206207002001 := 20629276467292602 \\
100001301^2 + 103100001^2 &= 10000260201692601 + 10629610206200001 := 20629870407892602 \\
100000011^2 + 110000001^2 &= 10000002200000121 + 12100000220000001 := 22100002420000122 \\
100010011^2 + 110010001^2 &= 10002002300220121 + 12102200320020001 := 22104202620240122 \\
100100011^2 + 110001001^2 &= 10020012202200121 + 12100220221002001 := 22120232423202122 \\
100001011^2 + 110100001^2 &= 10000202201022121 + 12122010220200001 := 22122212421222122 \\
100110011^2 + 110011001^2 &= 10022014302420121 + 12102420341022001 := 22124434643442122 \\
100011011^2 + 110110001^2 &= 10002202321242121 + 12124212320220001 := 22126414641462122 \\
100200011^2 + 110002001^2 &= 10040042204400121 + 12100440224004001 := 22140482428404122 \\
100101011^2 + 110101001^2 &= 10020212403222121 + 12122230421202001 := 22142442824424122 \\
100002011^2 + 110200001^2 &= 10000402204044121 + 12144040220400001 := 22144442424444122 \\
100210011^2 + 110012001^2 &= 10042046304620121 + 12102640364024001 := 22144686668644122 \\
100012011^2 + 110210001^2 &= 10002402344264121 + 12146244320420001 := 22148646664684122 \\
100003011^2 + 110300001^2 &= 10000602209066121 + 12166090220600001 := 22166692429666122 \\
101000011^2 + 110000101^2 &= 10201002222000121 + 12100022220010201 := 22301024442010322 \\
101010011^2 + 110010101^2 &= 10203022322220121 + 1210222322030201 := 22305244644250322 \\
100000111^2 + 111000001^2 &= 10000022200012321 + 12321000222000001 := 22321022422012322 \\
101100011^2 + 110001101^2 &= 10221212224200121 + 12100242221212201 := 22321454445412322 \\
101001011^2 + 110100101^2 &= 10201204223022121 + 12122032240210201 := 22323236463232322 \\
100010111^2 + 111010001^2 &= 10002022302232321 + 12323220322020001 := 22325242624252322 \\
101110011^2 + 110011101^2 &= 10223234324420121 + 12102442343232201 := 22325676667652322 \\
101011011^2 + 110110101^2 &= 10203224343242121 + 12124234342230201 := 22327458685472322 \\
100100111^2 + 111001001^2 &= 10020032222212321 + 1232122223002001 := 22341254445214322 \\
100001111^2 + 111100001^2 &= 10000222201234321 + 12343210222200001 := 22343432423434322 \\
101101011^2 + 110101101^2 &= 10221414425222121 + 12122252441412201 := 22343666866634322 \\
101002011^2 + 110200101^2 &= 10201406226044121 + 12144062260410201 := 22345468486454322 \\
100110111^2 + 111011001^2 &= 10022034324432321 + 12323442343022001 := 22345476667454322 \\
100011111^2 + 111110001^2 &= 10002222323454321 + 12345432322220001 := 22347654645674322 \\
100101111^2 + 111101001^2 &= 10020232423434321 + 12343432423202001 := 22363664846636322 \\
100002111^2 + 111200001^2 &= 10000422204456321 + 12365440222400001 := 22365862426856322 \\
102000011^2 + 110000201^2 &= 10404002244000121 + 12100044220040401 := 22504046464040522 \\
102010011^2 + 110010201^2 &= 10406042344220121 + 12102244324060401 := 22508286668280522 \\
101000111^2 + 111000101^2 &= 10201022422012321 + 12321022422010201 := 22522044844022522 \\
102100011^2 + 110001201^2 &= 10424412246200121 + 12100264221442401 := 22524676467642522 \\
101100111^2 + 111001101^2 &= 10221232444212321 + 12321244423212201 := 22542476867424522 \\
100000211^2 + 112000001^2 &= 10000042200044521 + 12544000224000001 := 22544042424044522
\end{aligned}$$

$$\begin{aligned}
101001111^2 + 111100101^2 &= 10201224423234321 + 12343232442210201 := 22544456865444522 \\
100010211^2 + 112010001^2 &= 10002042304264521 + 12546240324020001 := 22548282628284522 \\
100100211^2 + 112001001^2 &= 10020052242244521 + 12544224225002001 := 22564276467246522 \\
100001211^2 + 112100001^2 &= 10000242201466521 + 12566410224200001 := 22566652425666522 \\
101002111^2 + 111200101^2 &= 10201426426456321 + 12365462462410201 := 22566888888866522 \\
100101211^2 + 112101001^2 &= 10020252443666521 + 12566634425202001 := 22586886868868522 \\
103000011^2 + 110000301^2 &= 10609002266000121 + 12100066220090601 := 22709068486090722 \\
103100011^2 + 110001301^2 &= 10629612268200121 + 12100286221692601 := 22729898489892722 \\
100000311^2 + 113000001^2 &= 10000062200096721 + 12769000226000001 := 22769062426096722 \\
100100311^2 + 113001001^2 &= 10020072262296721 + 12769226227002001 := 22789298489298722 \\
110000011^2 + 110000011^2 &= 12100002420000121 + 12100002420000121 := 24200004840000242 \\
110001011^2 + 110100011^2 &= 12100222421022121 + 12122012422200121 := 24222234843222242 \\
110002011^2 + 110200011^2 &= 12100442424044121 + 12144042424400121 := 24244484848444242 \\
100000021^2 + 120000001^2 &= 10000004200000441 + 14400000240000001 := 24400004440000442 \\
100010021^2 + 120010001^2 &= 10002004300420441 + 14402400340020001 := 24404404640440442 \\
100100021^2 + 120001001^2 &= 10020014204200441 + 14400240241002001 := 24420254445202442 \\
110000111^2 + 111000011^2 &= 12100024420012321 + 12321002442000121 := 24421026862012442 \\
100001021^2 + 120100001^2 &= 10000204201042441 + 14424010240200001 := 24424214441242442 \\
100110021^2 + 120011001^2 &= 10022016304620441 + 14402640361022001 := 24424656665642442 \\
100011021^2 + 120110001^2 &= 10002204321462441 + 14426412340220001 := 24428616661682442 \\
110100111^2 + 111001011^2 &= 12122034442212321 + 12321224443022121 := 24443258885234442 \\
110001111^2 + 111100011^2 &= 12100244421234321 + 12343212444200121 := 24443456865434442 \\
100101021^2 + 120101001^2 &= 10020214405242441 + 14424250441202001 := 24444464846444442 \\
100002021^2 + 120200001^2 &= 10000404204084441 + 14448040240400001 := 24448444444484442 \\
101000021^2 + 120000101^2 &= 10201004242000441 + 14400024240010201 := 24601028482010642 \\
101010021^2 + 120010101^2 &= 10203024342420441 + 14402424342030201 := 24605448684450642 \\
101100021^2 + 120001101^2 &= 10221214246200441 + 14400264241212201 := 24621478487412642 \\
100000121^2 + 121000001^2 &= 10000024200014641 + 14641000242000001 := 24641024442014642 \\
110000211^2 + 112000011^2 &= 12100046420044521 + 12544002464000121 := 24644048884044642 \\
100010121^2 + 121010001^2 &= 10002024302434641 + 14643420342020001 := 24645444644454642 \\
100100121^2 + 121001001^2 &= 10020034224214641 + 14641242243002001 := 24661276467216642 \\
100001121^2 + 121100001^2 &= 10000224201256641 + 14665210242200001 := 24665434443456642 \\
100110121^2 + 121011001^2 &= 10022036326634641 + 14643662363022001 := 24665698689656642 \\
110001211^2 + 112100011^2 &= 12100266421466521 + 12566412466200121 := 24666678887666642 \\
100011121^2 + 121110001^2 &= 10002224323676641 + 14667632342220001 := 24669856665896642 \\
100101121^2 + 121101001^2 &= 10020234425456641 + 14665452443202001 := 24685686868658642 \\
100002121^2 + 121200001^2 &= 10000424204498641 + 14689440242400001 := 24689864446898642 \\
101000121^2 + 121000101^2 &= 10201024442014641 + 14641024442010201 := 24842048884024842
\end{aligned}$$

$$\begin{aligned}
100000221^2 + 122000001^2 &= 10000044200048841 + 14884000244000001 := 24884044444048842 \\
100010221^2 + 122010001^2 &= 10002044304468841 + 14886440344020001 := 24888484648488842 \\
100000031^2 + 130000001^2 &= 10000006200000961 + 16900000260000001 := 26900006460000962 \\
100010031^2 + 130010001^2 &= 10002006300620961 + 16902600360020001 := 26904606660640962 \\
100100031^2 + 130001001^2 &= 10020016206200961 + 16900260261002001 := 26920276467202962 \\
100110031^2 + 130011001^2 &= 10022018306820961 + 16902860381022001 := 26924878687842962 \\
100001031^2 + 130100001^2 &= 10000206201062961 + 16926010260200001 := 26926216461262962 \\
100101031^2 + 130101001^2 &= 10020216407262961 + 16926270461202001 := 26946486868464962 \\
100000002^2 + 200000001^2 &= 10000000400000004 + 40000000400000001 := 50000000800000005 \\
100100002^2 + 200001001^2 &= 10020010400400004 + 40000400401002001 := 50020410801402005 \\
100001002^2 + 200100001^2 &= 10000200401004004 + 40040010400200001 := 50040210801204005 \\
100200002^2 + 200002001^2 &= 10040040400800004 + 40000800404004001 := 50040840804804005 \\
100002002^2 + 200200001^2 &= 10000400404008004 + 40080040400400001 := 50080440804408005 \\
101000002^2 + 200000101^2 &= 10201000404000004 + 40000040400010201 := 50201040804010205 \\
101100002^2 + 200001101^2 &= 10221210404400004 + 40000440401212201 := 50221650805612205 \\
101001002^2 + 200100101^2 &= 10201202405004004 + 40040050420210201 := 50241252825214205 \\
101002002^2 + 200200101^2 &= 10201404408008004 + 40080080440410201 := 50281484848418205 \\
100000102^2 + 201000001^2 &= 10000020400010404 + 40401000402000001 := 50401020802010405 \\
102000002^2 + 200000201^2 &= 10404000408000004 + 40000080400040401 := 50404080808040405 \\
100100102^2 + 201001001^2 &= 10020030420410404 + 40401402403002001 := 50421432823412405 \\
102100002^2 + 200001201^2 &= 10424410408400004 + 40000480401442401 := 50424890809842405 \\
100001102^2 + 201100001^2 &= 10000220401214404 + 40441210402200001 := 50441430803414405 \\
100200102^2 + 201002001^2 &= 10040060440810404 + 40401804406004001 := 50441864846814405 \\
102001002^2 + 200100201^2 &= 10404204409004004 + 40040090440240401 := 50444294849244405 \\
100002102^2 + 201200001^2 &= 10000420404418404 + 40481440402400001 := 50481860806818405 \\
100000202^2 + 202000001^2 &= 10000040400040804 + 40804000404000001 := 50804040804040805 \\
100100202^2 + 202001001^2 &= 10020050440440804 + 40804404405002001 := 50824454845442805 \\
100001202^2 + 202100001^2 &= 10000240401444804 + 40844410404200001 := 50844650805644805 \\
100200202^2 + 202002001^2 &= 10040080480840804 + 40804808408004001 := 50844888888844805 \\
110000002^2 + 200000011^2 &= 12100000440000004 + 40000004400000121 := 52100004840000125 \\
110100002^2 + 200001011^2 &= 12122010440400004 + 40000404401022121 := 52122414841422125 \\
110001002^2 + 200100011^2 &= 12100220441004004 + 40040014402200121 := 52140234843204125 \\
110200002^2 + 200002011^2 &= 12144040440800004 + 40000804404044121 := 52144844844844125 \\
110002002^2 + 200200011^2 &= 12100440444008004 + 40080044404400121 := 52180484848408125 \\
111000002^2 + 200000111^2 &= 12321000444000004 + 40000044400012321 := 52321044844012325 \\
111100002^2 + 200001111^2 &= 12343210444400004 + 40000444401234321 := 52343654845634325 \\
111001002^2 + 200100111^2 &= 12321222445004004 + 40040054422212321 := 52361276867216325 \\
110000102^2 + 201000011^2 &= 12100022440010404 + 40401004422000121 := 52501026862010525
\end{aligned}$$

$$\begin{aligned}
110100102^2 + 201001011^2 &= 12122032460410404 + 40401406423022121 := 52523438883432525 \\
110001102^2 + 201100011^2 &= 12100242441214404 + 40441214424200121 := 52541456865414525 \\
112000002^2 + 200000211^2 &= 12544000448000004 + 40000084400044521 := 52544084848044525 \\
112100002^2 + 200001211^2 &= 12566410448400004 + 40000484401466521 := 52566894849866525 \\
110000202^2 + 202000011^2 &= 12100044440040804 + 40804004444000121 := 52904048884040925 \\
110001202^2 + 202100011^2 &= 12100264441444804 + 40844414446200121 := 52944678887644925 \\
100000012^2 + 210000001^2 &= 10000002400000144 + 44100000420000001 := 54100002820000145 \\
100100012^2 + 210001001^2 &= 10020012402400144 + 44100420421002001 := 54120432823402145 \\
100200012^2 + 210002001^2 &= 10040042404800144 + 44100840424004001 := 54140882828804145 \\
100001012^2 + 210100001^2 &= 10000202401024144 + 44142010420200001 := 54142212821224145 \\
100002012^2 + 210200001^2 &= 10000402404048144 + 44184040420400001 := 54184442824448145 \\
101000012^2 + 210000101^2 &= 10201002424000144 + 44100042420010201 := 54301044844010345 \\
101100012^2 + 210001101^2 &= 10221212426400144 + 44100462421212201 := 54321674847612345 \\
101001012^2 + 210100101^2 &= 10201204425024144 + 44142052440210201 := 54343256865234345 \\
101002012^2 + 210200101^2 &= 10201406428048144 + 44184082460410201 := 54385488888458345 \\
120000002^2 + 200000021^2 &= 14400000480000004 + 40000008400000441 := 54400008880000445 \\
120100002^2 + 200001021^2 &= 14424010480400004 + 40000408401042441 := 54424418881442445 \\
120001002^2 + 200100021^2 &= 14400240481004004 + 40040018404200441 := 54440258885204445 \\
120200002^2 + 200002021^2 &= 14448040480800004 + 40000808404084441 := 54448848884884445 \\
102000012^2 + 210000201^2 &= 10404002448000144 + 44100084420040401 := 54504086868040545 \\
100000112^2 + 211000001^2 &= 10000022400012544 + 44521000422000001 := 54521022822012545 \\
100100112^2 + 211001001^2 &= 10020032422412544 + 44521422423002001 := 54541454845414545 \\
100001112^2 + 211100001^2 &= 10000222401236544 + 44563210422200001 := 54563432823436545 \\
121000002^2 + 200000121^2 &= 14641000484000004 + 40000048400014641 := 54641048884014645 \\
121100002^2 + 200001121^2 &= 14665210484400004 + 40000448401256641 := 54665658885656645 \\
122000002^2 + 200000221^2 &= 14884000488000004 + 40000088400048841 := 54884088888048845 \\
100000212^2 + 212000001^2 &= 10000042400044944 + 44944000424000001 := 54944042824044945 \\
100100212^2 + 212001001^2 &= 10020052442444944 + 44944424425002001 := 54964476867446945 \\
100001212^2 + 212100001^2 &= 10000242401468944 + 44986410424200001 := 54986652825668945 \\
100000022^2 + 220000001^2 &= 10000004400000484 + 48400000440000001 := 58400004840000485 \\
100100022^2 + 220001001^2 &= 10020014404400484 + 48400440441002001 := 58420454845402485 \\
100001022^2 + 220100001^2 &= 10000204401044484 + 48444010440200001 := 58444214841244485 \\
100002022^2 + 220200001^2 &= 10000404404088484 + 48488040440400001 := 58488444844488485 \\
101000022^2 + 220000101^2 &= 10201004444000484 + 48400044440010201 := 58601048884010685 \\
101100022^2 + 220001101^2 &= 10221214448400484 + 48400484441212201 := 58621698889612685 \\
100000122^2 + 221000001^2 &= 10000024400014884 + 48841000442000001 := 58841024842014885 \\
100100122^2 + 221001001^2 &= 10020034424414884 + 48841442443002001 := 58861476867416885 \\
100001122^2 + 221100001^2 &= 10000224401258884 + 48885210442200001 := 58885434843458885
\end{aligned}$$

- Non-Palindromic Sum

$$\begin{aligned}
100020001^2 + 100020001^2 &= 10004000600040001 + 10004000600040001 := 20008001200080002 \\
100021001^2 + 100120001^2 &= 10004200641042001 + 10024014600240001 := 20028215241282002 \\
100111001^2 + 100111001^2 &= 10022212521222001 + 10022212521222001 := 20044425042444002 \\
100121001^2 + 100121001^2 &= 10024214841242001 + 10024214841242001 := 20048429682484002 \\
100022001^2 + 100220001^2 &= 10004400684044001 + 10044048600440001 := 20048449284484002 \\
100102001^2 + 100201001^2 &= 10020410604204001 + 10040240601402001 := 20060651205606002 \\
100112001^2 + 100211001^2 &= 10022412744224001 + 10042244721422001 := 20064657465646002 \\
100103001^2 + 100301001^2 &= 10020610809206001 + 10060290801602001 := 20080901610808002 \\
100113001^2 + 100311001^2 &= 10022612969226001 + 10062296921622001 := 20084909890848002 \\
100020101^2 + 101020001^2 &= 10004020604050201 + 10205040602040001 := 20209061206090202 \\
100120101^2 + 101021001^2 &= 10024034624250201 + 10205242643042001 := 20229277267292202 \\
100021101^2 + 101120001^2 &= 10004220645252201 + 10225254602240001 := 20229475247492202 \\
100111101^2 + 101111001^2 &= 10022232543432201 + 10223434523222001 := 20245667066654202 \\
100220101^2 + 101022001^2 &= 10044068644450201 + 10205444686044001 := 20249513330494202 \\
100121101^2 + 101121001^2 &= 10024234865452201 + 10225456843242001 := 20249691708694202 \\
100022101^2 + 101220001^2 &= 10004420688454201 + 10245488602440001 := 20249909290894202 \\
100201101^2 + 101102001^2 &= 10040260641612201 + 10221614606204001 := 20261875247816202 \\
100102101^2 + 101201001^2 &= 10020430624614201 + 10241642603402001 := 20262073228016202 \\
100003101^2 + 101300001^2 &= 10000620209616201 + 10261690202600001 := 20262310412216202 \\
100211101^2 + 101112001^2 &= 10042264763632201 + 10223636746224001 := 20265901509856202 \\
100112101^2 + 101211001^2 &= 10022432766634201 + 10243666723422001 := 20266099490056202 \\
100103101^2 + 101301001^2 &= 10020630829816201 + 10261892803602001 := 20282523633418202 \\
101010101^2 + 101010101^2 &= 10203040504030201 + 10203040504030201 := 20406081008060402 \\
101020101^2 + 101020101^2 &= 10205060806050201 + 10205060806050201 := 20410121612100402 \\
100020201^2 + 102020001^2 &= 10004040608080401 + 10408080604040001 := 20412121212120402 \\
101011101^2 + 101110101^2 &= 10203242525232201 + 10223252524230201 := 20426495049462402 \\
101021101^2 + 101120101^2 &= 10205262847252201 + 10225274826250201 := 20430537673502402 \\
100120201^2 + 102021001^2 &= 10024054648280401 + 10408284645042001 := 20432339293322402 \\
100021201^2 + 102120001^2 &= 10004240649482401 + 10428494604240001 := 20432735253722402 \\
101101101^2 + 101101101^2 &= 10221432623412201 + 10221432623412201 := 20442865246824402 \\
100002201^2 + 102200001^2 &= 10000440204844401 + 10444840204400001 := 20445280409244402 \\
101111101^2 + 101111101^2 &= 10223454745432201 + 10223454745432201 := 20446909490864402 \\
101012101^2 + 101210101^2 &= 10203444548434201 + 10243484544430201 := 20446929092864402 \\
100210201^2 + 102012001^2 &= 10042084384460401 + 10406448348024001 := 20448532732484402 \\
100111201^2 + 102111001^2 &= 10022252565662401 + 10426656525222001 := 20448909090884402
\end{aligned}$$

$$\begin{aligned}
100012201^2 + 102210001^2 &= 10002440348864401 + 10446884304420001 := 20449324653284402 \\
100220201^2 + 102022001^2 &= 10044088688480401 + 10408488688044001 := 20452577376524402 \\
100121201^2 + 102121001^2 &= 10024254889682401 + 10428698845242001 := 20452953734924402 \\
101102101^2 + 101201101^2 &= 10221634826614201 + 10241662843612201 := 20463297670226402 \\
100201201^2 + 102102001^2 &= 10040280681842401 + 10424818608204001 := 20465099290046402 \\
101112101^2 + 101211101^2 &= 10223656968634201 + 10243686965632201 := 20467343934266402 \\
101000201^2 + 102000101^2 &= 10201040602040401 + 10404020604010201 := 20605061206050602 \\
101010201^2 + 102010101^2 &= 10203060706060401 + 10406060706030201 := 20609121412090602 \\
101100201^2 + 102001101^2 &= 10221250642240401 + 10404224605212201 := 20625475247452602 \\
101001201^2 + 102100101^2 &= 10201242603442401 + 10424430624210201 := 20625673227652602 \\
101110201^2 + 102011101^2 &= 10223272746260401 + 10406264727232201 := 20629537473492602 \\
101011201^2 + 102110101^2 &= 10203262727462401 + 10426472726230201 := 20629735453692602 \\
101200201^2 + 102002101^2 &= 10241480682440401 + 10404428608414201 := 20645909290854602 \\
101101201^2 + 102101101^2 &= 10221452843642401 + 10424634825412201 := 20646087669054602 \\
101002201^2 + 102200101^2 &= 10201444606844401 + 10444860644410201 := 20646305251254602 \\
100101301^2 + 103101001^2 &= 10020270461892601 + 10629816407202001 := 20650086869094602 \\
101111201^2 + 102111101^2 &= 10223474967662401 + 10426676947432201 := 20650151915094602 \\
101000301^2 + 103000101^2 &= 10201060802090601 + 10609020806010201 := 20810081608100802 \\
101100301^2 + 103001101^2 &= 10221270862290601 + 10609226807212201 := 20830497669502802 \\
101001301^2 + 103100101^2 &= 10201262803692601 + 10629630826210201 := 20830893629902802 \\
100020011^2 + 110020001^2 &= 10004002600440121 + 12104400620040001 := 22108403220480122 \\
100120011^2 + 110021001^2 &= 10024016602640121 + 12104620661042001 := 22128637263682122 \\
100021011^2 + 110120001^2 &= 10004202641462121 + 12126414620240001 := 22130617261702122 \\
100111011^2 + 110111001^2 &= 10022214523442121 + 12124432541222001 := 22146647064664122 \\
100121011^2 + 110121001^2 &= 10024216843662121 + 12126634861242001 := 22150851704904122 \\
100022011^2 + 110220001^2 &= 10004402684484121 + 12148448620440001 := 22152851304924122 \\
100300011^2 + 110003001^2 &= 10060092206600121 + 12100660229006001 := 22160752435606122 \\
100201011^2 + 110102001^2 &= 10040242605422121 + 12122450624204001 := 22162693229626122 \\
100102011^2 + 110201001^2 &= 10020412606244121 + 12144260621402001 := 22164673227646122 \\
100310011^2 + 110013001^2 &= 10062098306820121 + 12102860389026001 := 22164958695846122 \\
100211011^2 + 110112001^2 &= 10042246725642121 + 12124652764224001 := 22166899489866122 \\
100112011^2 + 110211001^2 &= 10022414746464121 + 12146464741422001 := 22168879487886122 \\
100013011^2 + 110310001^2 &= 10002602369286121 + 12168296320620001 := 22170898689906122 \\
100301011^2 + 110103001^2 &= 10060292807622121 + 12122670829206001 := 22182963636828122 \\
100311011^2 + 110113001^2 &= 10062298927842121 + 12124872989226001 := 22187171917068122 \\
101020011^2 + 110020101^2 &= 10205042622440121 + 12104422624050201 := 22309465246490322 \\
100020111^2 + 111020001^2 &= 10004022604452321 + 12325440622040001 := 22329463226492322 \\
101120011^2 + 110021101^2 &= 10225256624640121 + 12104642665252201 := 22329899289892322
\end{aligned}$$

$$\begin{aligned}
101021011^2 + 110120101^2 &= 10205244663462121 + 12126436644250201 := 22331681307712322 \\
101200011^2 + 110002101^2 &= 10241442226400121 + 12100462224414201 := 22341904450814322 \\
101210011^2 + 110012101^2 &= 10243466326620121 + 12102662366434201 := 22346128693054322 \\
101111011^2 + 110111101^2 &= 10223436545442121 + 12124454563432201 := 22347891108874322 \\
101012011^2 + 110210101^2 &= 10203426366264121 + 12146266362430201 := 22349692728694322 \\
100120111^2 + 111021001^2 &= 10024036626652321 + 12325662663042001 := 22349699289694322 \\
100021111^2 + 111120001^2 &= 10004222645674321 + 12347654622240001 := 22351877267914322 \\
101121011^2 + 110121101^2 &= 10225458865662121 + 12126656885452201 := 22352115751114322 \\
100200111^2 + 111002001^2 &= 10040062244412321 + 12321444226004001 := 22361506470416322 \\
101300011^2 + 110003101^2 &= 10261692228600121 + 12100682229616201 := 22362374458216322 \\
101201011^2 + 110102101^2 &= 10241644627422121 + 12122472644614201 := 22364117272036322 \\
100210111^2 + 111012001^2 &= 10042066346632321 + 12323664366024001 := 22365730712656322 \\
101102011^2 + 110201101^2 &= 10221616628244121 + 12144282661612201 := 22365899289856322 \\
100111111^2 + 111111001^2 &= 10022234545654321 + 12345654543222001 := 22367889088876322 \\
101211011^2 + 110112101^2 &= 10243668747642121 + 12124674786634201 := 22368343534276322 \\
100012111^2 + 111210001^2 &= 10002422346676321 + 12367664322420001 := 22370086669096322 \\
101112011^2 + 110211101^2 &= 10223638768464121 + 12146486783632201 := 22370125552096322 \\
100121111^2 + 111121001^2 &= 10024236867874321 + 12347876863242001 := 22372113731116322 \\
100022111^2 + 111220001^2 &= 10004422688896321 + 12369888622440001 := 22374311311336322 \\
100201111^2 + 111102001^2 &= 10040262645634321 + 12343654626204001 := 22383917271838322 \\
101301011^2 + 110103101^2 &= 10261894829622121 + 12122692849816201 := 22384587679438322 \\
100102111^2 + 111201001^2 &= 10020432626656321 + 12365662623402001 := 22386095250058322 \\
100211111^2 + 111112001^2 &= 10042266767854321 + 12345876766224001 := 22388143534078322 \\
100003111^2 + 111300001^2 &= 10000622209678321 + 12387690222600001 := 22388312432278322 \\
100112111^2 + 111211001^2 &= 10022434768876321 + 12367886743422001 := 22390321512298322 \\
102020011^2 + 110020201^2 &= 10408082644440121 + 12104444628080401 := 22512527272520522 \\
102001011^2 + 110100201^2 &= 10404206245022121 + 12122054260240401 := 22526260505262522 \\
101010111^2 + 111010101^2 &= 10203042524232321 + 12323242524030201 := 22526285048262522 \\
102110011^2 + 110011201^2 &= 10426454346420121 + 12102464345462401 := 22528918691882522 \\
102011011^2 + 110110201^2 &= 10406246365242121 + 12124256364260401 := 22530502729502522 \\
101020111^2 + 111020101^2 &= 10205062826452321 + 12325462826050201 := 22530525652502522 \\
102120011^2 + 110021201^2 &= 10428496646640121 + 12104664669482401 := 22533161316122522 \\
102021011^2 + 110120201^2 &= 10408286685462121 + 12126458668280401 := 22534745353742522 \\
102200011^2 + 110002201^2 &= 10444842248400121 + 12100484224844401 := 22545326473244522 \\
101110111^2 + 111011101^2 &= 10223254546432321 + 12323464545232201 := 22546719091664522 \\
102101011^2 + 110101201^2 &= 10424616447222121 + 12122274461642401 := 22546890908864522 \\
101011111^2 + 111110101^2 &= 10203244545454321 + 12345454544230201 := 22548699089684522 \\
102210011^2 + 110012201^2 &= 10446886348620121 + 12102684368864401 := 22549570717484522
\end{aligned}$$



$$\begin{aligned}
101120111^2 + 111021101^2 &= 10225276848652321 + 12325684867252201 := 22550961715904522 \\
102111011^2 + 110111201^2 &= 10426658567442121 + 12124476585662401 := 22551135153104522 \\
100020211^2 + 112020001^2 &= 10004042608484521 + 12548480624040001 := 22552523232524522 \\
101021111^2 + 111120101^2 &= 10205264867674321 + 12347676846250201 := 22552941713924522 \\
101200111^2 + 111002101^2 &= 10241462466412321 + 12321466426414201 := 22562928892826522 \\
101101111^2 + 111101101^2 &= 10221434645434321 + 12343454643412201 := 22564889288846522 \\
101210111^2 + 111012101^2 &= 10243486568632321 + 12323686568434201 := 22567173137066522 \\
100110211^2 + 112011001^2 &= 10022054346464521 + 12546464345022001 := 22568518691486522 \\
101111111^2 + 111111101^2 &= 10223456767654321 + 12345676765432201 := 22569133533086522 \\
100011211^2 + 112110001^2 &= 10002242325686521 + 12568652324220001 := 22570894649906522 \\
101012111^2 + 111210101^2 &= 10203446568676321 + 12367686564430201 := 22571133133106522 \\
100200211^2 + 112002001^2 &= 10040082284444521 + 12544448228004001 := 22584530512448522 \\
101201111^2 + 111102101^2 &= 10241664867634321 + 12343676846614201 := 22585341714248522 \\
101102111^2 + 111201101^2 &= 10221636848656321 + 12365684863612201 := 22587321712268522 \\
100210211^2 + 112012001^2 &= 10042086388664521 + 12546688368024001 := 22588774756688522 \\
100002211^2 + 112200001^2 &= 10000442204888521 + 12588840224400001 := 22589282429288522 \\
101211111^2 + 111112101^2 &= 10243688989854321 + 12345898988634201 := 22589587978488522 \\
100111211^2 + 112111001^2 &= 10022254567886521 + 12568876545222001 := 22591131113108522 \\
100201211^2 + 112102001^2 &= 10040282685866521 + 12566858628204001 := 22607141314070522 \\
102000111^2 + 111000201^2 &= 10404022644012321 + 12321044622040401 := 22725067266052722 \\
102010111^2 + 111010201^2 &= 10406062746232321 + 12323264726060401 := 22729327472292722 \\
103001011^2 + 110100301^2 &= 10609208267022121 + 12122076280290601 := 22731284547312722 \\
101000211^2 + 112000101^2 &= 10201042622044521 + 12544022624010201 := 22745065246054722 \\
102100111^2 + 111001201^2 &= 10424432666212321 + 12321266623442401 := 22745699289654722 \\
102001111^2 + 111100201^2 &= 10404226645234321 + 12343254662240401 := 22747481307474722 \\
101010211^2 + 112010101^2 &= 10203062726264521 + 12546262726030201 := 22749325452294722 \\
102110111^2 + 111011201^2 &= 10426474768432321 + 12323486747462401 := 22749961515894722 \\
102011111^2 + 111110201^2 &= 10406266767454321 + 12345476766260401 := 22751743533714722 \\
103101011^2 + 110101301^2 &= 10629818469222121 + 12122296481892601 := 22752114951114722 \\
101100211^2 + 112001101^2 &= 10221252664244521 + 12544246625212201 := 22765499289456722 \\
102200111^2 + 111002201^2 &= 10444862688412321 + 12321488626844401 := 22766351315256722 \\
101001211^2 + 112100101^2 &= 10201244623466521 + 12566432644210201 := 22767677267676722 \\
102101111^2 + 111101201^2 &= 10424636867434321 + 12343476863642401 := 22768113731076722 \\
101110211^2 + 112011101^2 &= 10223274768464521 + 12546486747232201 := 22769761515696722 \\
101011211^2 + 112110101^2 &= 10203264747686521 + 12568674746230201 := 22771939493916722 \\
102111111^2 + 111111201^2 &= 10426678989654321 + 12345698987662401 := 22772377977316722 \\
101101211^2 + 112101101^2 &= 10221454865666521 + 12566656845412201 := 22788111711078722 \\
101002211^2 + 112200101^2 &= 10201446626888521 + 12588862664410201 := 22790309291298722
\end{aligned}$$



$$\begin{aligned}
101111211^2 + 112111101^2 &= 10223476989886521 + 12568898967432201 := 22792375957318722 \\
103000111^2 + 111000301^2 &= 10609022866012321 + 12321066822090601 := 22930089688102922 \\
103100111^2 + 111001301^2 &= 10629632888212321 + 12321288823692601 := 22950921711904922 \\
103001111^2 + 111100301^2 &= 10609228867234321 + 12343276882290601 := 22952505749524922 \\
101000311^2 + 113000101^2 &= 10201062822096721 + 12769022826010201 := 22970085648106922 \\
101100311^2 + 113001101^2 &= 10221272884296721 + 12769248827212201 := 22990521711508922 \\
110010011^2 + 110010011^2 &= 12102202520220121 + 12102202520220121 := 24204405040440242 \\
110020011^2 + 110020011^2 &= 12104402820440121 + 12104402820440121 := 24208805640880242 \\
110011011^2 + 110110011^2 &= 12102422541242121 + 12124214522420121 := 24226637063662242 \\
110021011^2 + 110120011^2 &= 12104622861462121 + 12126416822640121 := 24231039684102242 \\
110101011^2 + 110101011^2 &= 12122232623222121 + 12122232623222121 := 24244465246444242 \\
110111011^2 + 110111011^2 &= 12124434743442121 + 12124434743442121 := 24248869486884242 \\
110012011^2 + 110210011^2 &= 12102642564264121 + 12146246524620121 := 24248889088884242 \\
110102011^2 + 110201011^2 &= 12122452826244121 + 12144262825422121 := 24266715651666242 \\
110003011^2 + 110300011^2 &= 12100662429066121 + 12166092426600121 := 24266754855666242 \\
110112011^2 + 110211011^2 &= 12124654966464121 + 12146466945642121 := 24271121912106242 \\
110013011^2 + 110310011^2 &= 12102862589286121 + 12168298526820121 := 24271161116106242 \\
100020021^2 + 120020001^2 &= 10004004600840441 + 14404800640040001 := 24408805240880442 \\
110010111^2 + 111010011^2 &= 12102224522232321 + 12323222542220121 := 24425447064452442 \\
110020111^2 + 111020011^2 &= 12104424824452321 + 12325442842440121 := 24429867666892442 \\
100021021^2 + 120120001^2 &= 10004204641882441 + 14428814640240001 := 24433019282122442 \\
100200021^2 + 120002001^2 &= 10040044208400441 + 14400480244004001 := 24440524452404442 \\
100210021^2 + 120012001^2 &= 10042048308820441 + 14402880384024001 := 24444928692844442 \\
110110111^2 + 111011011^2 &= 12124236544432321 + 12323444563242121 := 24447681107674442 \\
110011111^2 + 111110011^2 &= 12102444543454321 + 12345434544420121 := 24447879087874442 \\
100111021^2 + 120111001^2 &= 10022216525662441 + 14426652561222001 := 24448869086884442 \\
110120111^2 + 111021011^2 &= 12126438846652321 + 12325664883462121 := 24452103730114442 \\
110021111^2 + 111120011^2 &= 12104644865674321 + 12347656844640121 := 24452301710314442 \\
100201021^2 + 120102001^2 &= 10040244609442441 + 14424490644204001 := 24464735253646442 \\
110200111^2 + 111002011^2 &= 12144064464412321 + 12321446446044121 := 24465510910456442 \\
110101111^2 + 111101011^2 &= 12122254643434321 + 12343434645222121 := 24465689288656442 \\
110002111^2 + 111200011^2 &= 12100464424456321 + 12365442446400121 := 24465906870856442 \\
100102021^2 + 120201001^2 &= 10020414608284441 + 14448280641402001 := 24468695249686442 \\
100211021^2 + 120112001^2 &= 10042248729862441 + 14426892784224001 := 24469141514086442 \\
110210111^2 + 111012011^2 &= 12146268566632321 + 12323666586264121 := 24469935152896442 \\
110111111^2 + 111111011^2 &= 12124456765654321 + 12345656765442121 := 24470113531096442 \\
110012111^2 + 111210011^2 &= 12102664566676321 + 12367666546620121 := 24470331113296442 \\
110201111^2 + 111102011^2 &= 12144284865634321 + 12343656848244121 := 24487941713878442
\end{aligned}$$

$$\begin{aligned}
110102111^2 + 111201011^2 &= 12122474846656321 + 12365664847422121 := 24488139694078442 \\
110003111^2 + 111300011^2 &= 12100684429678321 + 12387692448600121 := 24488376878278442 \\
110211111^2 + 111112011^2 &= 12146488987854321 + 12345878988464121 := 24492367976318442 \\
110112111^2 + 111211011^2 &= 12124676988876321 + 12367888967642121 := 24492565956518442 \\
101020021^2 + 120020101^2 &= 10205044642840441 + 14404824644050201 := 24609869286890642 \\
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101110021^2 + 120011101^2 &= 10223236346620441 + 14402664363232201 := 24625900709852642 \\
101011021^2 + 120110101^2 &= 10203226363462441 + 14426436362230201 := 24629662725692642 \\
101021021^2 + 120120101^2 &= 10205246683882441 + 14428838664250201 := 24634085348132642 \\
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111012111^2 + 111210111^2 &= 12323688788676321 + 12367688788632321 := 24691377577308642 \\
110111211^2 + 112111011^2 &= 12124478787886521 + 12568878787442121 := 24693357575328642 \\
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102100021^2 + 120001201^2 &= 10424414288200441 + 14400288241442401 := 24824702529642842 \\
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101110121^2 + 121011101^2 &= 10223256568634641 + 14643686565232201 := 24866943133866842 \\
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110011002^2 + 200110011^2 &= 12102420561044004 + 40044016502420121 := 52146437063464125 \\
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\end{aligned}$$

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\end{aligned}$$

$$\begin{aligned}
111110112^2 + 211011111^2 &= 12345456988652544 + 44525688965454321 := 56871145954106865 \\
111001112^2 + 211100111^2 &= 12321246865236544 + 44563256864212321 := 56884503729448865 \\
111011112^2 + 211110111^2 &= 12323466987476544 + 44567478966432321 := 56890945953908865 \\
110000212^2 + 212000011^2 &= 12100046640044944 + 44944004664000121 := 57044051304045065 \\
110010212^2 + 212010011^2 &= 12102246744284944 + 44948244764220121 := 57050491508505065 \\
110100212^2 + 212001011^2 &= 12122056682444944 + 44944428665022121 := 57066485347467065 \\
110110212^2 + 212011011^2 &= 12124258786684944 + 44948668785242121 := 57072927571927065 \\
110001212^2 + 212100011^2 &= 12100266641468944 + 44986414666200121 := 57086681307669065 \\
110101212^2 + 212101011^2 &= 12122276883868944 + 44986838867222121 := 57109115751091065 \\
100010022^2 + 220010001^2 &= 10002004500440484 + 48404400540020001 := 58406405040460485 \\
100020022^2 + 220020001^2 &= 10004004800880484 + 48408800840040001 := 58412805640920485 \\
100110022^2 + 220011001^2 &= 10022016504840484 + 48404840561022001 := 58426857065862485 \\
100200022^2 + 220002001^2 &= 10040044408800484 + 48400880444004001 := 58440924852804485 \\
100011022^2 + 220110001^2 &= 10002204521484484 + 48448412540220001 := 58450617061704485 \\
100101022^2 + 220101001^2 &= 10020214605444484 + 48444450641202001 := 58464665246646485 \\
100111022^2 + 220111001^2 &= 10022216725884484 + 48448852761222001 := 58471069487106485 \\
100201022^2 + 220102001^2 &= 10040244809844484 + 48444890844204001 := 58485135654048485 \\
120000012^2 + 210000021^2 &= 14400002880000144 + 44100008820000441 := 58500011700000585 \\
120010012^2 + 210010021^2 &= 14402402980240144 + 44104208920420441 := 58506611900660585 \\
100102022^2 + 220201001^2 &= 10020414808488484 + 48488480841402001 := 58508895649890485 \\
120100012^2 + 210001021^2 &= 14424012882400144 + 44100428821042441 := 58524441703442585 \\
120110012^2 + 210011021^2 &= 14426414982640144 + 44104628941462441 := 58531043924102585 \\
120001012^2 + 210100021^2 &= 14400242881024144 + 44142018824200441 := 58542261705224585 \\
120200012^2 + 210002021^2 &= 14448042884800144 + 44100848824084441 := 58548891708884585 \\
120002012^2 + 210200021^2 &= 14400482884048144 + 44184048828400441 := 58584531712448585 \\
101010022^2 + 220010101^2 &= 10203024544440484 + 48404444542030201 := 58607469086470685 \\
101020022^2 + 220020101^2 &= 10205044844880484 + 48408844844050201 := 58613889688930685 \\
101110022^2 + 220011101^2 &= 10223236548840484 + 48404884563232201 := 58628121112072685 \\
101001022^2 + 220100101^2 &= 10201206445044484 + 48444054460210201 := 58645260905254685 \\
101011022^2 + 220110101^2 &= 10203226565484484 + 48448456562230201 := 58651683127714685 \\
101101022^2 + 220101101^2 &= 10221416649444484 + 48444494661412201 := 58665911310856685 \\
101111022^2 + 220111101^2 &= 10223438769884484 + 48448896783432201 := 58672335553316685 \\
101002022^2 + 220200101^2 &= 10201408448088484 + 48488084480410201 := 58689492928498685 \\
102000022^2 + 220000201^2 &= 10404004488000484 + 48400088440040401 := 58804092928040885 \\
102010022^2 + 220010201^2 &= 10406044588440484 + 48404488544060401 := 58810533132500885 \\
102020022^2 + 220020201^2 &= 10408084888880484 + 48408888848080401 := 58816973736960885 \\
100010122^2 + 221010001^2 &= 10002024502454884 + 48845420542020001 := 58847445044474885 \\
102001022^2 + 220100201^2 &= 10404208489044484 + 48444098480240401 := 58848306969284885
\end{aligned}$$

$$\begin{aligned}
100020122^2 + 221020001^2 &= 10004024804894884 + 48849840842040001 := 58853865646934885 \\
100110122^2 + 221011001^2 &= 10022036526854884 + 48845862563022001 := 58867899089876885 \\
100200122^2 + 221002001^2 &= 10040064448814884 + 48841884446004001 := 58881948894818885 \\
100011122^2 + 221110001^2 &= 10002224523698884 + 48889632542220001 := 58891857065918885 \\
100101122^2 + 221101001^2 &= 10020234625658884 + 48885652643202001 := 58905887268860885 \\
120000112^2 + 211000021^2 &= 14400026880012544 + 44521008862000441 := 58921035742012985 \\
120010112^2 + 211010021^2 &= 14402426982252544 + 44525228962420441 := 58927655944672985 \\
120001112^2 + 211100021^2 &= 14400266881236544 + 44563218866200441 := 58963485747436985 \\
101000122^2 + 221000101^2 &= 10201024644014884 + 48841044642010201 := 59042069286025085 \\
101010122^2 + 221010101^2 &= 10203044746454884 + 48845464744030201 := 59048509490485085 \\
101100122^2 + 221001101^2 &= 10221234668414884 + 48841486643212201 := 59062721311627085 \\
101001122^2 + 221100101^2 &= 10201226645258884 + 48885254662210201 := 59086481307469085 \\
101011122^2 + 221110101^2 &= 10203246767698884 + 48889676764230201 := 59092923531929085 \\
101101122^2 + 221101101^2 &= 10221436869658884 + 48885696863412201 := 59107133733071085 \\
102000122^2 + 221000201^2 &= 10404024888014884 + 48841088842040401 := 59245113730055285 \\
102001122^2 + 221100201^2 &= 10404228889258884 + 48885298882240401 := 59289527771499285 \\
110000022^2 + 220000011^2 &= 12100004840000484 + 48400004840000121 := 60500009680000605 \\
110010022^2 + 220010011^2 &= 12102204940440484 + 48404404940220121 := 60506609880660605 \\
110100022^2 + 220001011^2 &= 12122014844400484 + 48400444841022121 := 60522459685422605 \\
110110022^2 + 220011011^2 &= 12124216944840484 + 48404844961242121 := 60529061906082605 \\
110001022^2 + 220100011^2 &= 12100224841044484 + 48444014842200121 := 60544239683244605 \\
110200022^2 + 220002011^2 &= 12144044848800484 + 48400884844044121 := 60544929692844605 \\
110011022^2 + 220110011^2 &= 12102424961484484 + 48448416942420121 := 60550841903904605 \\
110002022^2 + 220200011^2 &= 12100444844088484 + 48488044844400121 := 60588489688488605 \\
111000022^2 + 220000111^2 &= 12321004884000484 + 48400048840012321 := 60721053724012805 \\
111010022^2 + 220010111^2 &= 12323224984440484 + 48404448942232321 := 60727673926672805 \\
111100022^2 + 220001111^2 &= 12343214888400484 + 48400488841234321 := 60743703729634805 \\
111110022^2 + 220011111^2 &= 12345436988840484 + 48404888963454321 := 60750325952294805 \\
111001022^2 + 220100111^2 &= 12321226885044484 + 48444058862212321 := 60765285747256805 \\
111002022^2 + 220200111^2 &= 12321448888088484 + 48488088884412321 := 60809537772500805 \\
110000122^2 + 221000011^2 &= 12100026840014884 + 48841004862000121 := 60941031702015005 \\
110010122^2 + 221010011^2 &= 12102226942454884 + 48845424962220121 := 60947651904675005 \\
110100122^2 + 221001011^2 &= 12122036864414884 + 48841446863022121 := 60963483727437005 \\
110110122^2 + 221011011^2 &= 12124238966854884 + 48845866983242121 := 60970105950097005 \\
110001122^2 + 221100011^2 &= 12100246841258884 + 48885214864200121 := 60985461705459005 \\
110200122^2 + 221002011^2 &= 12144066888814884 + 48841888866044121 := 60985955754859005 \\
110011122^2 + 221110011^2 &= 12102446963698884 + 48889636964420121 := 60992083928119005 \\
200000002^2 + 200000002^2 &= 40000000800000004 + 40000000800000004 := 80000001600000008
\end{aligned}$$



$$\begin{aligned}
200010002^2 + 200010002^2 &= 40004000900040004 + 40004000900040004 := 80008001800080008 \\
200001002^2 + 200100002^2 &= 40000400801004004 + 40040010800400004 := 80040411601404008 \\
200011002^2 + 200110002^2 &= 40004400921044004 + 40044012900440004 := 80048413821484008 \\
200002002^2 + 200200002^2 &= 40000800804008004 + 40080040800800004 := 80080841604808008 \\
200012002^2 + 200210002^2 &= 40004800944048004 + 40084044900840004 := 80088845844888008 \\
200000102^2 + 201000002^2 &= 40000040800010404 + 40401000804000004 := 80401041604010408 \\
200010102^2 + 201010002^2 &= 40004040902050404 + 40405020904040004 := 80409061806090408 \\
200100102^2 + 201001002^2 &= 40040050820410404 + 40401402805004004 := 80441453625414408 \\
200001102^2 + 201100002^2 &= 40000440801214404 + 40441210804400004 := 80441651605614408 \\
200110102^2 + 201011002^2 &= 40044052922450404 + 40405422925044004 := 80449475847494408 \\
200011102^2 + 201110002^2 &= 40004440923254404 + 40445232904440004 := 80449673827694408 \\
200200102^2 + 201002002^2 &= 40080080840810404 + 40401804808008004 := 80481885648818408 \\
200002102^2 + 201200002^2 &= 40000840804418404 + 40481440804800004 := 80482281609218408 \\
200210102^2 + 201012002^2 &= 40084084942850404 + 40405824948048004 := 80489909890898408 \\
200012102^2 + 201210002^2 &= 40004840946458404 + 40485464904840004 := 80490305851298408 \\
200000202^2 + 202000002^2 &= 40000080800040804 + 40804000808000004 := 80804081608040808 \\
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200100202^2 + 202001002^2 &= 40040090840440804 + 40804404809004004 := 80844495649444808 \\
200001202^2 + 202100002^2 &= 40000480801444804 + 40844410808400004 := 80844891609844808 \\
200110202^2 + 202011002^2 &= 40044092944480804 + 40808444929044004 := 80852537873524808 \\
200011202^2 + 202110002^2 &= 40004480925484804 + 40848452908440004 := 80852933833924808 \\
200002202^2 + 202200002^2 &= 40000880804848804 + 40884840808800004 := 80885721613648808 \\
200012202^2 + 202210002^2 &= 40004880948888804 + 40888884908840004 := 80893765857728808 \\
200000012^2 + 210000002^2 &= 40000004800000144 + 44100000840000004 := 84100005640000148 \\
200010012^2 + 210010002^2 &= 40004004900240144 + 44104200940040004 := 84108205840280148 \\
200100012^2 + 210001002^2 &= 40040014802400144 + 44100420841004004 := 84140435643404148 \\
200001012^2 + 210100002^2 &= 40000404801024144 + 44142010840400004 := 84142415641424148 \\
200110012^2 + 210011002^2 &= 40044016902640144 + 44104620961044004 := 84148637863684148 \\
200011012^2 + 210110002^2 &= 40004404921264144 + 44146212940440004 := 84150617861704148 \\
200200012^2 + 210002002^2 &= 40080044804800144 + 44100840844008004 := 84180885648808148 \\
200002012^2 + 210200002^2 &= 40000804804048144 + 44184040840800004 := 84184845644848148 \\
200012012^2 + 210210002^2 &= 40004804944288144 + 44188244940840004 := 84193049885128148 \\
201000012^2 + 210000102^2 &= 40401004824000144 + 44100042840010404 := 84501047664010548 \\
201010012^2 + 210010102^2 &= 40405024924240144 + 44104242942050404 := 84509267866290548 \\
200000112^2 + 211000002^2 &= 40000044800012544 + 44521000844000004 := 84521045644012548 \\
200010112^2 + 211010002^2 &= 40004044902252544 + 44525220944040004 := 84529265846292548 \\
201100012^2 + 210001102^2 &= 40441214826400144 + 44100462841214404 := 84541677667614548 \\
201001012^2 + 210100102^2 &= 40401406825024144 + 44142052860410404 := 84543459685434548
\end{aligned}$$

$$\begin{aligned}
201110012^2 + 210011102^2 &= 40445236926640144 + 44104662963254404 := 84549899889894548 \\
201011012^2 + 210110102^2 &= 40405426945264144 + 44146254962450404 := 84551681907714548 \\
200100112^2 + 211001002^2 &= 40040054822412544 + 44521422845004004 := 84561477667416548 \\
200001112^2 + 211100002^2 &= 40000444801236544 + 44563210844400004 := 84563655645636548 \\
200110112^2 + 211011002^2 &= 40044056924652544 + 44525642965044004 := 84569699889696548 \\
200011112^2 + 211110002^2 &= 40004444923476544 + 44567432944440004 := 84571877867916548 \\
201200012^2 + 210002102^2 &= 40481444828800144 + 44100882844418404 := 84582327673218548 \\
201002012^2 + 210200102^2 &= 40401808828048144 + 44184082880810404 := 84585891708858548 \\
201012012^2 + 210210102^2 &= 40405828968288144 + 44188286982850404 := 84594115951138548 \\
200200112^2 + 211002002^2 &= 40080084844812544 + 44521844848008004 := 84601929692820548 \\
202000012^2 + 210000202^2 &= 40804004848000144 + 44100084840040804 := 84904089688040948 \\
202010012^2 + 210010202^2 &= 40808044948240144 + 44104284944080804 := 84912329892320948 \\
200000212^2 + 212000002^2 &= 40000084800044944 + 44944000848000004 := 84944085648044948 \\
202001012^2 + 210100202^2 &= 40804408849024144 + 44142094880440804 := 84946503729464948 \\
200010212^2 + 212010002^2 &= 40004084904284944 + 44948240948040004 := 84952325852324948 \\
202011012^2 + 210110202^2 &= 40808448969264144 + 44146296984480804 := 84954745953744948 \\
200100212^2 + 212001002^2 &= 40040094842444944 + 44944424849004004 := 84984519691448948 \\
200001212^2 + 212100002^2 &= 40000484801468944 + 44986410848400004 := 84986895649868948 \\
200110212^2 + 212011002^2 &= 40044096946684944 + 44948664969044004 := 84992761915728948 \\
200000022^2 + 220000002^2 &= 40000008800000484 + 48400000880000004 := 88400009680000488 \\
200010022^2 + 220010002^2 &= 40004008900440484 + 48404400980040004 := 88408409880480488 \\
200100022^2 + 220001002^2 &= 40040018804400484 + 48400440881004004 := 88440459685404488 \\
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200011022^2 + 220110002^2 &= 40004408921484484 + 48448412980440004 := 88452821901924488 \\
200200022^2 + 220002002^2 &= 40080048808800484 + 48400880884008004 := 88480929692808488 \\
200002022^2 + 220200002^2 &= 40000808804088484 + 48488040880800004 := 88488849684888488 \\
201000022^2 + 220000102^2 &= 40401008844000484 + 48400044880010404 := 88801053724010888 \\
201010022^2 + 220010102^2 &= 40405028944440484 + 48404444982050404 := 88809473926490888 \\
200000122^2 + 221000002^2 &= 40000048800014884 + 48841000884000004 := 88841049684014888 \\
201100022^2 + 220001102^2 &= 40441218848400484 + 48400484881214404 := 88841703729614888 \\
200010122^2 + 221010002^2 &= 40004048902454884 + 48845420984040004 := 88849469886494888 \\
200100122^2 + 221001002^2 &= 40040058824414884 + 48841442885004004 := 88881501709418888 \\
200001122^2 + 221100002^2 &= 40000448801258884 + 48885210884400004 := 88885659685658888 \\
200011122^2 + 221110002^2 &= 40004448923698884 + 48889632984440004 := 88894081908138888 \\
200200122^2 + 221002002^2 &= 40080088848814884 + 48841884888008004 := 88921973736822888 \\
202000022^2 + 220000202^2 &= 40804008888000484 + 48400088880040804 := 89204097768041288 \\
202010022^2 + 220010202^2 &= 40808048988440484 + 48404488984080804 := 89212537972521288 \\
100000003^2 + 300000001^2 &= 10000000600000009 + 90000000600000001 := 100000001200000010
\end{aligned}$$



$$\begin{aligned}
100010003^2 + 300010001^2 &= 10002000700060009 + 90006000700020001 := 100008001400080010 \\
100100003^2 + 300001001^2 &= 10020010600600009 + 90000600601002001 := 100020611201602010 \\
100110003^2 + 300011001^2 &= 10022012700660009 + 90006600721022001 := 100028613421682010 \\
100001003^2 + 300100001^2 &= 10000200601006009 + 90060010600200001 := 100060211201206010 \\
100011003^2 + 300110001^2 &= 10002200721066009 + 90066012700220001 := 100068213421286010 \\
100101003^2 + 300101001^2 &= 10020210801606009 + 90060610801202001 := 100080821602808010 \\
100111003^2 + 300111001^2 &= 10022212921666009 + 90066612921222001 := 100088825842888010 \\
101000003^2 + 300000101^2 &= 10201000606000009 + 90000060600010201 := 100201061206010210 \\
101010003^2 + 300010101^2 &= 10203020706060009 + 90006060702030201 := 100209081408090210 \\
101100003^2 + 300001101^2 &= 10221210606600009 + 90000660601212201 := 100221871207812210 \\
101110003^2 + 300011101^2 &= 10223232706660009 + 90006660723232201 := 100229893429892210 \\
101001003^2 + 300100101^2 &= 10201202607006009 + 90060070620210201 := 100261273227216210 \\
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101111003^2 + 300111101^2 &= 10223434927666009 + 90066672943432201 := 100290107871098210 \\
100000103^2 + 301000001^2 &= 10000020600010609 + 90601000602000001 := 100601021202010610 \\
100010103^2 + 301010001^2 &= 10002020702070609 + 90607020702020001 := 100609041404090610 \\
100100103^2 + 301001001^2 &= 10020030620610609 + 90601602603002001 := 100621633223612610 \\
100110103^2 + 301011001^2 &= 10022032722670609 + 90607622723022001 := 100629655445692610 \\
100001103^2 + 301100001^2 &= 10000220601216609 + 90661210602200001 := 100661431203416610 \\
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101000103^2 + 301000101^2 &= 10201020806010609 + 90601060802010201 := 100802081608020810 \\
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101100103^2 + 301001101^2 &= 10221230826610609 + 90601662803212201 := 100822893629822810 \\
101110103^2 + 301011101^2 &= 10223252928670609 + 90607682925232201 := 100830935853902810 \\
101001103^2 + 301100101^2 &= 10201222807216609 + 90661270822210201 := 100862493629426810 \\
101011103^2 + 301110101^2 &= 10203242929276609 + 90667292924230201 := 100870535853506810 \\
110000003^2 + 300000011^2 &= 12100000660000009 + 90000006600000121 := 102100007260000130 \\
110010003^2 + 300010011^2 &= 12102200760060009 + 90006006700220121 := 102108207460280130 \\
110100003^2 + 300001011^2 &= 12122010660600009 + 90000606601022121 := 102122617261622130 \\
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110011003^2 + 300110011^2 &= 12102420781066009 + 90066018702420121 := 102168439483486130 \\
110101003^2 + 300101011^2 &= 12122230861606009 + 90060616803222121 := 102182847664828130 \\
110111003^2 + 300111011^2 &= 12124432981666009 + 90066618923442121 := 102191051905108130 \\
111000003^2 + 300000111^2 &= 12321000666000009 + 90000066600012321 := 102321067266012330
\end{aligned}$$

$$\begin{aligned}
111010003^2 + 300010111^2 &= 12323220766060009 + 90006066702232321 := 102329287468292330 \\
111100003^2 + 300001111^2 &= 12343210666600009 + 90000666601234321 := 102343877267834330 \\
111110003^2 + 300011111^2 &= 12345432766660009 + 90006666723454321 := 102352099490114330 \\
111001003^2 + 300100111^2 &= 12321222667006009 + 90060076622212321 := 102381299289218330 \\
111011003^2 + 300110111^2 &= 12323442787066009 + 90066078724432321 := 102389521511498330 \\
111101003^2 + 300101111^2 &= 12343432867606009 + 90060676823434321 := 102404109691040330 \\
111111003^2 + 300111111^2 &= 12345654987666009 + 90066678945654321 := 102412333933320330 \\
110000103^2 + 301000011^2 &= 12100022660010609 + 90601006622000121 := 102701029282010730 \\
110010103^2 + 301010011^2 &= 12102222762070609 + 90607026722220121 := 102709249484290730 \\
110100103^2 + 301001011^2 &= 12122032680610609 + 90601608623022121 := 102723641303632730 \\
110110103^2 + 301011011^2 &= 12124234782670609 + 90607628743242121 := 102731863525912730 \\
110001103^2 + 301100011^2 &= 12100242661216609 + 90661216624200121 := 102761459285416730 \\
110011103^2 + 301110011^2 &= 12102442783276609 + 90667238724420121 := 102769681507696730 \\
110101103^2 + 301101011^2 &= 12122252881816609 + 90661818825222121 := 102784071707038730 \\
111000103^2 + 301000111^2 &= 12321022866010609 + 90601066822012321 := 102922089688022930 \\
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111100103^2 + 301001111^2 &= 12343232886610609 + 90601668823234321 := 102944901709844930 \\
111110103^2 + 301011111^2 &= 12345454988670609 + 90607688945454321 := 102953143934124930 \\
111001103^2 + 301100111^2 &= 12321244867216609 + 90661276844212321 := 102982521711428930 \\
111011103^2 + 301110111^2 &= 12323464989276609 + 90667298946432321 := 102990763935708930 \\
100000013^2 + 310000001^2 &= 10000002600000169 + 96100000620000001 := 106100003220000170 \\
100010013^2 + 310010001^2 &= 10002002700260169 + 96106200720020001 := 106108203420280170 \\
100100013^2 + 310001001^2 &= 10020012602600169 + 96100620621002001 := 106120633223602170 \\
100110013^2 + 310011001^2 &= 10022014702860169 + 96106820741022001 := 106128835443882170 \\
100001013^2 + 310100001^2 &= 10000202601026169 + 96162010620200001 := 106162213221226170 \\
100011013^2 + 310110001^2 &= 10002202721286169 + 96168212720220001 := 106170415441506170 \\
100101013^2 + 310101001^2 &= 10020212803626169 + 96162630821202001 := 106182843624828170 \\
100111013^2 + 310111001^2 &= 10022214923886169 + 96168832941222001 := 106191047865108170 \\
101000013^2 + 310000101^2 &= 10201002626000169 + 96100062620010201 := 106301065246010370 \\
101010013^2 + 310010101^2 &= 10203022726260169 + 96106262722030201 := 106309285448290370 \\
101100013^2 + 310001101^2 &= 10221212628600169 + 96100682621212201 := 106321895249812370 \\
101110013^2 + 310011101^2 &= 10223234728860169 + 96106882743232201 := 106330117472092370 \\
101001013^2 + 310100101^2 &= 10201204627026169 + 96162072640210201 := 106363277267236370 \\
101011013^2 + 310110101^2 &= 10203224747286169 + 96168274742230201 := 106371499489516370 \\
101101013^2 + 310101101^2 &= 10221414829626169 + 96162692841412201 := 106384107671038370 \\
101111013^2 + 310111101^2 &= 10223436949886169 + 96168894963432201 := 106392331913318370 \\
100000113^2 + 311000001^2 &= 10000022600012769 + 96721000622000001 := 106721023222012770 \\
100010113^2 + 311010001^2 &= 10002022702272769 + 96727220722020001 := 106729243424292770
\end{aligned}$$

$$\begin{aligned}
100100113^2 + 311001001^2 &= 10020032622612769 + 96721622623002001 := 106741655245614770 \\
100110113^2 + 311011001^2 &= 10022034724872769 + 96727842743022001 := 106749877467894770 \\
100001113^2 + 311100001^2 &= 10000222601238769 + 96783210622200001 := 106783433223438770 \\
100011113^2 + 311110001^2 &= 10002222723498769 + 96789432722220001 := 106791655445718770 \\
100101113^2 + 311101001^2 &= 10020232823838769 + 96783832823202001 := 106804065647040770 \\
101000113^2 + 311000101^2 &= 10201022826012769 + 96721062822010201 := 106922085648022970 \\
101010113^2 + 311010101^2 &= 10203042928272769 + 96727282924030201 := 106930325852302970 \\
101100113^2 + 311001101^2 &= 10221232848612769 + 96721684823212201 := 106942917671824970 \\
101001113^2 + 311100101^2 &= 10201224827238769 + 96783272842210201 := 106984497669448970 \\
101011113^2 + 311110101^2 &= 10203244949498769 + 96789494944230201 := 106992739893728970 \\
110000013^2 + 310000011^2 &= 12100002860000169 + 96100006820000121 := 108200009680000290 \\
110010013^2 + 310010011^2 &= 12102202960260169 + 96106206920220121 := 108208409880480290 \\
110100013^2 + 310001011^2 &= 12122012862600169 + 96100626821022121 := 108222639683622290 \\
110110013^2 + 310011011^2 &= 12124214962860169 + 96106826941242121 := 108231041904102290 \\
110001013^2 + 310100011^2 &= 12100222861026169 + 96162016822200121 := 108262239683226290 \\
110011013^2 + 310110011^2 &= 12102422981286169 + 96168218922420121 := 108270641903706290 \\
111000013^2 + 310000111^2 &= 12321002886000169 + 96100068820012321 := 108421071706012490 \\
111010013^2 + 310010111^2 &= 12323222986260169 + 96106268922232321 := 108429491908492490 \\
111100013^2 + 310001111^2 &= 12343212888600169 + 96100688821234321 := 108443901709834490 \\
111110013^2 + 310011111^2 &= 12345434988860169 + 96106888943454321 := 108452323932314490 \\
111001013^2 + 310100111^2 &= 12321224887026169 + 96162078842212321 := 108483303729238490 \\
110000113^2 + 311000011^2 &= 12100024860012769 + 96721006842000121 := 108821031702012890 \\
110010113^2 + 311010011^2 &= 12102224962272769 + 96727226942220121 := 108829451904492890 \\
110100113^2 + 311001011^2 &= 12122034882612769 + 96721628843022121 := 108843663725634890 \\
110110113^2 + 311011011^2 &= 12124236984872769 + 96727848963242121 := 108852085948114890 \\
110001113^2 + 311100011^2 &= 12100244861238769 + 96783216844200121 := 108883461705438890 \\
110011113^2 + 311110011^2 &= 12102444983498769 + 96789438944420121 := 108891883927918890
\end{aligned}$$

## 2.10 Ten Digits Expressions

This section brings **palindromic-type squared expressions** having ten digits. Final sums palindromic and non-palindromic are given in separately.

### • Palindromic Sum

$$\begin{aligned}
1000000001^2 + 1000000001^2 &= 1000000002000000001 + 1000000002000000001 := 2000000004000000002 \\
1000010001^2 + 1000100001^2 &= 1000020002100020001 + 1000200012000200001 := 2000220014100220002 \\
1000110001^2 + 1000110001^2 &= 1000220014100220001 + 1000220014100220001 := 2000440028200440002 \\
1000020001^2 + 1000200001^2 &= 1000040002400040001 + 1000400042000400001 := 2000440044400440002
\end{aligned}$$

$$\begin{aligned}
1000030001^2 + 1000300001^2 &= 1000060002900060001 + 1000600092000600001 := 2000660094900660002 \\
1000001001^2 + 1001000001^2 &= 1000002002001002001 + 1002001002002000001 := 2002003004003002002 \\
1000101001^2 + 1001010001^2 &= 1000202012201202001 + 1002021022102020001 := 2002223034303222002 \\
1000011001^2 + 1001100001^2 &= 1000022002121022001 + 1002201212002200001 := 2002223214123222002 \\
1000201001^2 + 1001020001^2 &= 1000402042401402001 + 1002041042402040001 := 2002443084803442002 \\
1000111001^2 + 1001110001^2 &= 1000222014321222001 + 1002221234102220001 := 2002443248423442002 \\
1000021001^2 + 1001200001^2 &= 1000042002441042001 + 1002401442002400001 := 2002443444443442002 \\
1000031001^2 + 1001300001^2 &= 1000062002961062001 + 1002601692002600001 := 2002663694963662002 \\
1001001001^2 + 1001001001^2 &= 1002003004003002001 + 1002003004003002001 := 2004006008006004002 \\
1000002001^2 + 1002000001^2 &= 1000004002004004001 + 1004004002004000001 := 2004008004008004002 \\
1001011001^2 + 1001101001^2 &= 1002023024123022001 + 1002203214203202001 := 2004226238326224002 \\
1000102001^2 + 1002010001^2 &= 1000204012404204001 + 1004024042104020001 := 2004228054508224002 \\
1000012001^2 + 1002100001^2 &= 1000024002144024001 + 1004204412004200001 := 2004228414148224002 \\
1001021001^2 + 1001201001^2 &= 1002043044443042001 + 1002403444403402001 := 2004446488846444002 \\
1000112001^2 + 1002110001^2 &= 1000224014544224001 + 1004224454104220001 := 2004448468648444002 \\
1000022001^2 + 1002200001^2 &= 1000044002484044001 + 1004404842004400001 := 2004448844488444002 \\
1000000101^2 + 1010000001^2 &= 1000000202000010201 + 1020100002020000001 := 2020100204020010202 \\
1000100101^2 + 1010010001^2 &= 1000200212020210201 + 1020120202120020001 := 2020320414140230202 \\
1000010101^2 + 1010100001^2 &= 1000020202102030201 + 1020302012020200001 := 2020322214122230202 \\
1000200101^2 + 1010020001^2 &= 1000400242040410201 + 1020140402420040001 := 2020540644460450202 \\
1000110101^2 + 1010110001^2 &= 1000220214122230201 + 1020322214120220001 := 2020542428242450202 \\
1000020101^2 + 1010200001^2 &= 1000040202404050201 + 1020504042020400001 := 2020544244424450202 \\
1000300101^2 + 1010030001^2 &= 1000600292060610201 + 1020160602920060001 := 2020760894980670202 \\
1000030101^2 + 1010300001^2 &= 1000060202906070201 + 1020706092020600001 := 2020766294926670202 \\
1001000101^2 + 1010001001^2 &= 1002001202202010201 + 1020102022021002001 := 2022103224223012202 \\
1000001101^2 + 1011000001^2 &= 1000002202001212201 + 1022121002022000001 := 2022123204023212202 \\
1001100101^2 + 1010011001^2 &= 1002201412222210201 + 1020122222141022001 := 2022323634363232202 \\
1001010101^2 + 1010101001^2 &= 1002021222304030201 + 1020304032221202001 := 2022325254525232202 \\
1000101101^2 + 1011010001^2 &= 1000202212221412201 + 1022141222122020001 := 20223434343432202 \\
1000011101^2 + 1011100001^2 &= 1000022202123232201 + 1022323212022200001 := 2022345414145432202 \\
1001110101^2 + 1010111001^2 &= 1002221434324230201 + 1020324234341222001 := 2022545668665452202 \\
1000201101^2 + 1011020001^2 &= 1000402242441612201 + 1022161442422040001 := 2022563684863652202 \\
1000111101^2 + 1011110001^2 &= 1000222214343432201 + 1022343434122220001 := 2022565648465652202 \\
1000021101^2 + 1011200001^2 &= 1000042202445252201 + 1022525442022400001 := 2022567644467652202 \\
1000031101^2 + 1011300001^2 &= 1000062202967272201 + 1022727692022600001 := 2022789894989872202 \\
1002000101^2 + 1010002001^2 &= 1004004202404010201 + 1020104042024004001 := 2024108244428014202 \\
1001001101^2 + 1011001001^2 &= 1002003204203212201 + 1022123024023002001 := 2024126228226214202 \\
1000002101^2 + 1012000001^2 &= 1000004202004414201 + 1024144002024000001 := 2024148204028414202
\end{aligned}$$

$$\begin{aligned}
&1002100101^2 + 1010012001^2 = 1004204612424210201 + 1020124242164024001 := 2024328854588234202 \\
&1001101101^2 + 1011011001^2 = 1002203414423412201 + 1022143244143022001 := 2024346658566434202 \\
&1001011101^2 + 1011101001^2 = 1002023224325232201 + 1022325234223202001 := 2024348458548434202 \\
&1000102101^2 + 1012010001^2 = 1000204212424614201 + 1024164242124020001 := 2024368454548634202 \\
&1010000101^2 + 1010000101^2 = 1020100204020010201 + 1020100204020010201 := 2040200408040020402 \\
&1000000201^2 + 1020000001^2 = 1000000402000040401 + 1040400002040000001 := 2040400404040040402 \\
&1010010101^2 + 1010100101^2 = 1020120404122030201 + 1020302214040210201 := 2040422618162240402 \\
&1000100201^2 + 1020010001^2 = 1000200412040240401 + 1040420402140020001 := 2040620814180260402 \\
&1000010201^2 + 1020100001^2 = 1000020402104060401 + 1040604012040200001 := 2040624414144260402 \\
&1010020101^2 + 1010200101^2 = 1020140604424050201 + 1020504244060410201 := 2040644848484460402 \\
&1000110201^2 + 1020110001^2 = 1000220414144260401 + 1040624414140220001 := 2040844828284480402 \\
&1000020201^2 + 1020200001^2 = 1000040402408080401 + 1040808042040400001 := 2040848444448480402 \\
&1010001101^2 + 1011000101^2 = 1020102224021212201 + 1022121204222010201 := 2042223428243222402 \\
&1001000201^2 + 1020001001^2 = 1002001402402040401 + 1040402042041002001 := 2042403444443042402 \\
&1000001201^2 + 1021000001^2 = 1000002402001442401 + 1042441002042000001 := 2042443404043442402 \\
&1010101101^2 + 1011010101^2 = 1020304234241412201 + 1022141424324030201 := 2042445658565442402 \\
&1010011101^2 + 1011100101^2 = 1020122424143232201 + 1022323414242210201 := 2042445838385442402 \\
&1001010201^2 + 1020101001^2 = 1002021422506060401 + 1040606052241202001 := 2042627474747262402 \\
&1000101201^2 + 1021010001^2 = 1000202412241642401 + 1042461422142020001 := 2042663834383662402 \\
&1000011201^2 + 1021100001^2 = 1000022402125462401 + 1042645212042200001 := 2042667614167662402 \\
&1010002101^2 + 1012000101^2 = 1020104244024414201 + 1024144204424010201 := 2044248448448424402 \\
&1002000201^2 + 1020002001^2 = 1004004402804040401 + 1040404082044004001 := 2044408484848044402 \\
&1001001201^2 + 1021001001^2 = 1002003404403442401 + 1042443044043002001 := 2044446448446444402 \\
&1000002201^2 + 1022000001^2 = 1000004402004844401 + 1044484002044000001 := 2044488404048844402 \\
&1000000301^2 + 1030000001^2 = 1000000602000090601 + 1060900002060000001 := 2060900604060090602 \\
&1001000301^2 + 1030001001^2 = 1002001602602090601 + 1060902062061002001 := 2062903664663092602 \\
&1000001301^2 + 1031000001^2 = 1000002602001692601 + 1062961002062000001 := 2062963604063692602 \\
&1001001301^2 + 1031001001^2 = 1002003604603692601 + 1062963064063002001 := 2064966668666694602 \\
&1000000011^2 + 1100000001^2 = 1000000022000000121 + 1210000002200000001 := 2210000024200000122 \\
&1000100011^2 + 1100010001^2 = 1000200032002200121 + 1210022002300020001 := 2210222034302220122 \\
&1000010011^2 + 1100100001^2 = 1000020022100220121 + 1210220012200200001 := 2210240034300420122 \\
&1000200011^2 + 1100020001^2 = 1000400062004400121 + 1210044002600040001 := 2210444064604440122 \\
&1000110011^2 + 1100110001^2 = 1000220034102420121 + 1210242014300220001 := 2210462048402640122 \\
&1000020011^2 + 1100200001^2 = 1000040022400440121 + 1210440042200400001 := 2210480064600840122 \\
&1001000011^2 + 1100001001^2 = 1002001022022000121 + 1210002202201002001 := 2212003224223002122 \\
&1000001011^2 + 1101000001^2 = 1000002022001022121 + 1212201002202000001 := 2212203024203022122 \\
&1001100011^2 + 1100011001^2 = 1002201232024200121 + 1210024202321022001 := 2212225434345222122 \\
&1001010011^2 + 1100101001^2 = 1002021042122220121 + 1210222212401202001 := 2212243254523422122
\end{aligned}$$

$$\begin{aligned}
1000101011^2 + 1101010001^2 &= 1000202032203222121 + 1212223022302020001 := 2212425054505242122 \\
1000011011^2 + 1101100001^2 &= 1000022022121242121 + 1212421212202200001 := 2212443234323442122 \\
1001200011^2 + 1100021001^2 &= 1002401462026400121 + 1210046202641042001 := 2212447664667442122 \\
1001110011^2 + 1100111001^2 &= 1002221254124420121 + 1210244214521222001 := 2212465468645642122 \\
1000111011^2 + 1101110001^2 &= 1000222034323442121 + 1212443234302220001 := 2212665268625662122 \\
1000021011^2 + 1101200001^2 &= 1000042022441462121 + 1212641442202400001 := 2212683464643862122 \\
1002000011^2 + 1100002001^2 &= 1004004022044000121 + 1210004402204004001 := 2214008424248004122 \\
1001001011^2 + 1101001001^2 &= 1002003024023022121 + 1212203204203002001 := 2214206228226024122 \\
1002010011^2 + 1100102001^2 &= 1004024062144220121 + 1210224412604204001 := 2214248474748424122 \\
1000002011^2 + 1102000001^2 &= 1000004022004044121 + 1214404002204000001 := 2214408024208044122 \\
1001101011^2 + 1101011001^2 &= 1002203234225222121 + 1212225224323022001 := 2214428458548244122 \\
1001011011^2 + 1101101001^2 &= 1002023044143242121 + 1212423414403202001 := 2214446458546444122 \\
1000012011^2 + 1102100001^2 &= 1000024022144264121 + 1214624412204200001 := 2214648434348464122 \\
1000022011^2 + 1102200001^2 &= 1000044022484484121 + 1214844842204400001 := 2214888864688884122 \\
1010000011^2 + 1100000101^2 &= 1020100022220000121 + 1210000222200010201 := 2230100244420010322 \\
1010100011^2 + 1100010101^2 &= 1020302032222200121 + 1210022222302030201 := 2230324254524230322 \\
1010010011^2 + 1100100101^2 &= 1020120222320220121 + 1210220232220210201 := 2230340454540430322 \\
1010200011^2 + 1100020101^2 &= 1020504062224400121 + 1210044222604050201 := 2230548284828450322 \\
1010110011^2 + 1100110101^2 &= 1020322234322420121 + 1210242234322230201 := 2230564468644650322 \\
1010020011^2 + 1100200101^2 &= 1020140422620440121 + 1210440262240410201 := 2230580684860850322 \\
1000000111^2 + 1110000001^2 &= 1000000222000012321 + 1232100002220000001 := 2232100224220012322 \\
1011000011^2 + 1100001101^2 &= 1022121022242000121 + 1210002422201212201 := 2232123444443212322 \\
1010001011^2 + 1101000101^2 &= 1020102042221022121 + 1212201222402010201 := 2232303264623032322 \\
1000100111^2 + 1110010001^2 &= 1000200232022212321 + 1232122202320020001 := 2232322434342232322 \\
1000010111^2 + 1110100001^2 &= 1000020222102232321 + 1232322012220200001 := 2232342234322432322 \\
1011100011^2 + 1100011101^2 &= 1022323232244200121 + 1210024422323232201 := 2232347654567432322 \\
1011010011^2 + 1100101101^2 &= 1022141242342220121 + 1210222432421412201 := 2232363674763632322 \\
1010101011^2 + 1101010101^2 &= 1020304052423222121 + 1212223242504030201 := 2232527294927252322 \\
1010011011^2 + 1101100101^2 &= 1020122242341242121 + 1212421432422210201 := 2232543674763452322 \\
1000200111^2 + 1110020001^2 &= 1000400262044412321 + 1232144402620040001 := 2232544664664452322 \\
1000110111^2 + 1110110001^2 &= 1000220234124432321 + 1232344214320220001 := 2232564448444652322 \\
1000020111^2 + 1110200001^2 &= 1000040222404452321 + 1232544042220400001 := 2232584264624852322 \\
1011110011^2 + 1100111101^2 &= 1022343454344420121 + 1210244434543432201 := 2232587888887852322 \\
1001000111^2 + 1110001001^2 &= 100200122222012321 + 1232102222221002001 := 2234103444443014322 \\
1012000011^2 + 1100002101^2 &= 1024144022264000121 + 1210004622204414201 := 2234148644468414322 \\
1000001111^2 + 1111000001^2 &= 1000002222001234321 + 1234321002222000001 := 2234323224223234322 \\
1001100111^2 + 1110011001^2 &= 1002201432244212321 + 1232124422341022001 := 2234325854585234322 \\
1011001011^2 + 1101001101^2 &= 1022123044243022121 + 1212203424403212201 := 2234326468646234322
\end{aligned}$$



$$\begin{aligned}
1001010111^2 + 1110101001^2 &= 1002021242324232321 + 1232324232421202001 := 2234345474745434322 \\
1012010011^2 + 1100102101^2 &= 1024164262364220121 + 1210224632624614201 := 2234388894988834322 \\
1010002011^2 + 1102000101^2 &= 1020104062224044121 + 1214404222604010201 := 2234508284828054322 \\
1000101111^2 + 1111010001^2 &= 1000202232223434321 + 1234343222322020001 := 2234545454545454322 \\
1000011111^2 + 1111100001^2 &= 1000022222123454321 + 1234543212222200001 := 2234565434345654322 \\
1011011011^2 + 1101101101^2 &= 1022143264363242121 + 1212423634623412201 := 2234566898986654322 \\
1001110111^2 + 1110111001^2 &= 1002221454346432321 + 1232346434541222001 := 2234567888887654322 \\
1010012011^2 + 1102100101^2 &= 1020124262364264121 + 1214624632624210201 := 2234748894988474322 \\
1000111111^2 + 1111110001^2 &= 1000222234345654321 + 1234565434322220001 := 2234787668667874322 \\
1002000111^2 + 1110002001^2 &= 1004004222444012321 + 1232104442224004001 := 2236108664668016322 \\
1001001111^2 + 1111001001^2 &= 1002003224223234321 + 1234323224223002001 := 2236326448446236322 \\
1000002111^2 + 1112000001^2 &= 1000004222004456321 + 1236544002224000001 := 2236548224228456322 \\
1001101111^2 + 1111011001^2 &= 1002203434445434321 + 1234345444343022001 := 2236548878788456322 \\
1001011111^2 + 1111101001^2 &= 1002023244345454321 + 1234545434423202001 := 2236568678768656322 \\
1020000011^2 + 1100000201^2 &= 1040400022440000121 + 1210000442200040401 := 2250400464640040522 \\
1020100011^2 + 1100010201^2 &= 1040604032442200121 + 1210022442304060401 := 2250626474746260522 \\
1020010011^2 + 1100100201^2 &= 1040420422540220121 + 1210220452240240401 := 2250640874780460522 \\
1020110011^2 + 1100110201^2 &= 1040624434542420121 + 1210242454344260401 := 2250866888886680522 \\
1010000111^2 + 1110000101^2 &= 1020100224220012321 + 1232100224220010201 := 2252200448440022522 \\
1010100111^2 + 1110010101^2 &= 1020302234242212321 + 1232122424322030201 := 2252424658564242522 \\
1010010111^2 + 1110100101^2 &= 1020120424322232321 + 1232322234240210201 := 2252442658562442522 \\
1021000011^2 + 1100001201^2 &= 1042441022462000121 + 1210002642201442401 := 2252443664663442522 \\
1010200111^2 + 1110020101^2 &= 1020504264264412321 + 1232144624624050201 := 2252648888888462522 \\
1021100011^2 + 1100011201^2 &= 1042645232464200121 + 1210024642325462401 := 2252669874789662522 \\
1010020111^2 + 1110200101^2 &= 1020140624624452321 + 1232544264260410201 := 2252684888884862522 \\
1011000111^2 + 1110001101^2 &= 1022121224442012321 + 1232102444221212201 := 2254223668663224522 \\
1000000211^2 + 1120000001^2 &= 1000000422000044521 + 1254400002240000001 := 2254400424240044522 \\
1010001111^2 + 1111000101^2 &= 1020102244221234321 + 1234321224422010201 := 2254423468643244522 \\
1011010111^2 + 1110101101^2 &= 1022141444544232321 + 1232324454441412201 := 2254465898985644522 \\
1022000011^2 + 1100002201^2 &= 1044484022484000121 + 1210004842204844401 := 2254488864688844522 \\
1000100211^2 + 1120010001^2 &= 1000200432042244521 + 1254422402340020001 := 2254622834382264522 \\
1000010211^2 + 1120100001^2 &= 1000020422104264521 + 1254624012240200001 := 2254644434344464522 \\
1010101111^2 + 1111010101^2 &= 1020304254443434321 + 1234343444524030201 := 2254647698967464522 \\
1010011111^2 + 1111100101^2 &= 1020122444343454321 + 1234543434442210201 := 2254665878785664522 \\
1000110211^2 + 1120110001^2 &= 1000220434146464521 + 1254646414340220001 := 2254866848486684522 \\
1000020211^2 + 1120200001^2 &= 1000040422408484521 + 1254848042240400001 := 2254888464648884522 \\
1012000111^2 + 1110002101^2 &= 1024144224664012321 + 1232104664224414201 := 2256248888888426522 \\
1001000211^2 + 1120001001^2 &= 1002001422422044521 + 1254402242241002001 := 2256403664663046522
\end{aligned}$$

$$\begin{aligned}
1000001211^2 + 1121000001^2 &= 1000002422001466521 + 1256641002242000001 := 2256643424243466522 \\
1001010211^2 + 1120101001^2 &= 1002021442526264521 + 1254626252441202001 := 2256647694967466522 \\
1010002111^2 + 1112000101^2 &= 1020104264224456321 + 1236544224624010201 := 2256648488848466522 \\
1000101211^2 + 1121010001^2 &= 1000202432243666521 + 1256663422342020001 := 2256865854585686522 \\
1000011211^2 + 1121100001^2 &= 1000022422125686521 + 1256865212242200001 := 2256887634367886522 \\
1001001211^2 + 1121001001^2 &= 1002003424423466521 + 1256643244243002001 := 2258646668666468522 \\
1000002211^2 + 1122000001^2 &= 1000004422004888521 + 1258884002244000001 := 2258888424248888522 \\
1030000011^2 + 1100000301^2 &= 1060900022660000121 + 1210000662200090601 := 2270900684860090722 \\
1031000011^2 + 1100001301^2 &= 1062961022682000121 + 1210002862201692601 := 2272963884883692722 \\
1000000311^2 + 1130000001^2 &= 1000000622000096721 + 1276900002260000001 := 2276900624260096722 \\
1001000311^2 + 1130001001^2 &= 1002001622622096721 + 1276902262261002001 := 2278903884883098722 \\
1100000011^2 + 1100000011^2 &= 1210000024200000121 + 1210000024200000121 := 2420000048400000242 \\
1100010011^2 + 1100100011^2 &= 1210022024300220121 + 1210220034202200121 := 2420242058502420242 \\
1100020011^2 + 1100200011^2 &= 1210044024600440121 + 1210440064204400121 := 2420484088804840242 \\
1100001011^2 + 1101000011^2 &= 1210002224201022121 + 1212201024222000121 := 2422203248423022242 \\
1100101011^2 + 1101010011^2 &= 1210222234403222121 + 1212223044322220121 := 2422445278725442242 \\
1100011011^2 + 1101100011^2 &= 1210024224321242121 + 1212421234224200121 := 2422445458545442242 \\
1100021011^2 + 1101200011^2 &= 1210046224641462121 + 1212641464226400121 := 2422687688867862242 \\
1100002011^2 + 1102000011^2 &= 1210004424204044121 + 1214404024244000121 := 2424408448448044242 \\
1000000021^2 + 1200000001^2 &= 1000000042000000441 + 1440000002400000001 := 2440000044400000442 \\
1000100021^2 + 1200010001^2 &= 1000200052004200441 + 1440024002500020001 := 2440224054504220442 \\
1000010021^2 + 1200100001^2 &= 1000020042100420441 + 1440240012400200001 := 2440260054500620442 \\
1000200021^2 + 1200020001^2 &= 1000400082008400441 + 1440048002800040001 := 2440448084808440442 \\
1000110021^2 + 1200110001^2 &= 1000220054104620441 + 1440264014500220001 := 2440484068604840442 \\
1001000021^2 + 1200001001^2 &= 1002001042042000441 + 1440002402401002001 := 2442003444443002442 \\
1100000111^2 + 1110000011^2 &= 1210000244200012321 + 1232100024420000121 := 2442100268620012442 \\
1001100021^2 + 1200011001^2 &= 1002201252046200441 + 1440026402521022001 := 2442227654567222442 \\
1001010021^2 + 1200101001^2 &= 1002021062142420441 + 1440242412601202001 := 2442263474743622442 \\
1100100111^2 + 1110010011^2 &= 1210220254222212321 + 1232122224520220121 := 2442342478742432442 \\
1100010111^2 + 1110100011^2 &= 1210022244302232321 + 1232322034422200121 := 2442344278724432442 \\
1000001021^2 + 1201000001^2 &= 1000002042001042441 + 1442401002402000001 := 2442403044403042442 \\
1001110021^2 + 1200111001^2 &= 1002221274146620441 + 1440266414721222001 := 2442487688867842442 \\
1000101021^2 + 1201010001^2 &= 1000202052205242441 + 1442425022502020001 := 2442627074707262442 \\
1000011021^2 + 1201100001^2 &= 1000022042121462441 + 1442641212402200001 := 2442663254523662442 \\
1000111021^2 + 1201110001^2 &= 1000222054325662441 + 1442665234502220001 := 2442887288827882442 \\
1002000021^2 + 1200002001^2 &= 1004004042084000441 + 1440004802404004001 := 2444008844488004442 \\
1002010021^2 + 1200102001^2 &= 1004024082184420441 + 1440244812804204001 := 2444268894988624442 \\
1101000111^2 + 1110001011^2 &= 1212201244422012321 + 1232102244421022121 := 2444303488843034442
\end{aligned}$$



$$\begin{aligned}
1100001111^2 + 1111000011^2 &= 1210002444201234321 + 1234321024442000121 := 2444323468643234442 \\
1001001021^2 + 1201001001^2 &= 1002003044043042441 + 1442403404403002001 := 2444406448446044442 \\
1101100111^2 + 1110011011^2 &= 1212421454444212321 + 1232124444541242121 := 2444545898985454442 \\
1100101111^2 + 1111010011^2 &= 1210222454423434321 + 1234343244542220121 := 2444565698965654442 \\
1100011111^2 + 1111100011^2 &= 1210024444323454321 + 1234543234444200121 := 2444567678767654442 \\
1001011021^2 + 1201101001^2 &= 1002023064163462441 + 1442643614603202001 := 2444666678766664442 \\
1000002021^2 + 1202000001^2 &= 1000004042004084441 + 1444804002404000001 := 2444808044408084442 \\
1100002111^2 + 1112000011^2 &= 1210004644204456321 + 1236544024464000121 := 2446548668668456442 \\
1010000021^2 + 1200000101^2 &= 1020100042420000441 + 1440000242400010201 := 2460100284820010642 \\
1010100021^2 + 1200010101^2 &= 1020302052424200441 + 1440024242502030201 := 2460326294926230642 \\
1010010021^2 + 1200100101^2 &= 1020120242520420441 + 1440240252420210201 := 2460360494940630642 \\
1011000021^2 + 1200001101^2 &= 1022121042462000441 + 1440002642401212201 := 2462123684863212642 \\
1011100021^2 + 1200011101^2 &= 1022323252466200441 + 1440026642523232201 := 2462349894989432642 \\
1000000121^2 + 1210000001^2 &= 1000000242000014641 + 1464100002420000001 := 2464100244420014642 \\
1000100121^2 + 1210010001^2 &= 1000200252024214641 + 1464124202520020001 := 2464324454544234642 \\
1000010121^2 + 1210100001^2 &= 1000020242102434641 + 1464342012420200001 := 2464362254522634642 \\
1100000211^2 + 1120000011^2 &= 1210000464200044521 + 1254400024640000121 := 2464400488840044642 \\
1000200121^2 + 1210020001^2 &= 1000400282048414641 + 1464148402820040001 := 2464548684868454642 \\
1000110121^2 + 1210110001^2 &= 1000220254126634641 + 1464366214520220001 := 2464586468646854642 \\
1100100211^2 + 1120010011^2 &= 1210220474242244521 + 1254422424740220121 := 2464642898982464642 \\
1100010211^2 + 1120100011^2 &= 1210022464304264521 + 1254624034642200121 := 2464646498946464642 \\
1001000121^2 + 1210001001^2 &= 1002001242242014641 + 1464102422421002001 := 2466103664663016642 \\
1001010121^2 + 1210101001^2 &= 1002021262344434641 + 1464344432621202001 := 2466365694965636642 \\
1000001121^2 + 1211000001^2 &= 1000002242001256641 + 1466521002422000001 := 2466523244423256642 \\
1100001211^2 + 1121000011^2 &= 1210002664201466521 + 1256641024662000121 := 2466643688863466642 \\
1000101121^2 + 1211010001^2 &= 1000202252225456641 + 1466545222522020001 := 2466747474747476642 \\
1000011121^2 + 1211100001^2 &= 100022242123676641 + 1466763212422200001 := 2466785454545876642 \\
1100011211^2 + 1121100011^2 &= 1210024664325686521 + 1256865234664200121 := 2466889898989886642 \\
1001001121^2 + 1211001001^2 &= 1002003244243256641 + 1466523424423002001 := 2468526668666258642 \\
1001011121^2 + 1211101001^2 &= 1002023264365676641 + 1466765634623202001 := 2468788898988878642 \\
1100002211^2 + 1122000011^2 &= 1210004864204888521 + 1258884024684000121 := 2468888888888888642 \\
1000002121^2 + 1212000001^2 &= 1000004242004498641 + 1468944002424000001 := 2468948244428498642 \\
1010000121^2 + 1210000101^2 &= 1020100244420014641 + 1464100244420010201 := 2484200488840024842 \\
1010100121^2 + 1210010101^2 &= 1020302254444214641 + 1464124444522030201 := 2484426698966244842 \\
1010010121^2 + 1210100101^2 &= 1020120444522434641 + 1464342254440210201 := 2484462698962644842 \\
1000000221^2 + 1220000001^2 &= 1000000442000048841 + 1488400002440000001 := 2488400444440048842 \\
1000100221^2 + 1220010001^2 &= 1000200452044248841 + 1488424402540020001 := 2488624854584268842 \\
1000010221^2 + 1220100001^2 &= 1000020442104468841 + 1488644012440200001 := 2488664454544668842
\end{aligned}$$

$$\begin{aligned}
1000110221^2 + 1220110001^2 &= 1000220454148668841 + 1488668414540220001 := 2488888868688888842 \\
1000000031^2 + 1300000001^2 &= 1000000062000000961 + 1690000002600000001 := 2690000064600000962 \\
1000100031^2 + 1300010001^2 &= 1000200072006200961 + 1690026002700020001 := 2690226074706220962 \\
1000010031^2 + 1300100001^2 &= 1000020062100620961 + 1690260012600200001 := 2690280074700820962 \\
1001000031^2 + 1300001001^2 &= 1002001062062000961 + 1690002602601002001 := 2692003664663002962 \\
1001100031^2 + 1300011001^2 &= 1002201272068200961 + 1690028602721022001 := 2692229874789222962 \\
1001010031^2 + 1300101001^2 &= 1002021082162620961 + 1690262612801202001 := 2692283694963822962 \\
1000001031^2 + 1301000001^2 &= 1000002062001062961 + 1692601002602000001 := 2692603064603062962 \\
1000101031^2 + 1301010001^2 &= 1000202072207262961 + 1692627022702020001 := 2692829094909282962 \\
1000011031^2 + 1301100001^2 &= 1000022062121682961 + 1692861212602200001 := 2692883274723882962 \\
1001001031^2 + 1301001001^2 &= 1002003064063062961 + 1692603604603002001 := 2694606668666064962 \\
1001011031^2 + 1301101001^2 &= 1002023084183682961 + 1692863814803202001 := 2694886898986884962 \\
1000000002^2 + 2000000001^2 &= 1000000004000000004 + 4000000004000000001 := 5000000008000000005 \\
1000100002^2 + 2000010001^2 &= 1000200014000400004 + 4000040004100020001 := 5000240018100420005 \\
1000010002^2 + 2000100001^2 &= 1000020004100040004 + 4000400014000200001 := 5000420018100240005 \\
1000200002^2 + 2000020001^2 &= 1000400044000800004 + 4000080004400040001 := 5000480048400840005 \\
1000020002^2 + 2000200001^2 &= 1000040004400080004 + 4000800044000400001 := 5000840048400480005 \\
1001000002^2 + 2000001001^2 &= 1002001004004000004 + 4000004004001002001 := 5002005008005002005 \\
1001100002^2 + 2000011001^2 &= 1002201214004400004 + 4000044004121022001 := 5002245218125422005 \\
1001010002^2 + 2000101001^2 &= 1002021024104040004 + 4000404014201202001 := 5002425038305242005 \\
1001200002^2 + 2000021001^2 &= 1002401444004800004 + 4000084004441042001 := 5002485448445842005 \\
1001020002^2 + 2000201001^2 &= 1002041044404080004 + 4000804044401402001 := 5002845088805482005 \\
1000001002^2 + 2001000001^2 &= 1000002004001004004 + 4004001004002000001 := 5004003008003004005 \\
1000101002^2 + 2001010001^2 &= 1000202014201404004 + 4004041024102020001 := 5004243038303424005 \\
1000011002^2 + 2001100001^2 &= 1000022004121044004 + 4004401214002200001 := 5004423218123244005 \\
1000201002^2 + 2001020001^2 &= 1000402044401804004 + 4004081044402040001 := 5004483088803844005 \\
1000021002^2 + 2001200001^2 &= 1000042004441084004 + 4004801444002400001 := 5004843448443484005 \\
1000002002^2 + 2002000001^2 &= 1000004004004008004 + 4008004004004000001 := 5008008008008008005 \\
1000102002^2 + 2002010001^2 &= 1000204014404408004 + 4008044044104020001 := 5008248058508428005 \\
1000012002^2 + 2002100001^2 &= 1000024004144048004 + 4008404414004200001 := 5008428418148248005 \\
1000022002^2 + 2002200001^2 &= 1000044004484088004 + 4008804844004400001 := 5008848848488488005 \\
1010000002^2 + 2000000101^2 &= 1020100004040000004 + 4000000404000010201 := 5020100408040010205 \\
1010100002^2 + 2000010101^2 &= 1020302014040400004 + 4000040404102030201 := 5020342418142430205 \\
1010010002^2 + 2000100101^2 &= 1020120204140040004 + 4000400414020210201 := 5020520618160250205 \\
1010200002^2 + 2000020101^2 &= 1020504044040800004 + 4000080404404050201 := 5020584448444850205 \\
1010020002^2 + 2000200101^2 &= 1020140404440080004 + 4000800444040410201 := 5020940848480490205 \\
1011000002^2 + 2000001101^2 &= 1022121004044000004 + 4000004404001212201 := 5022125408045212205 \\
1011100002^2 + 2000011101^2 &= 1022323214044400004 + 4000044404123232201 := 5022367618167632205
\end{aligned}$$

$$\begin{aligned}
1011010002^2 + 2000101101^2 &= 1022141224144040004 + 4000404414221412201 := 5022545638365452205 \\
1011020002^2 + 2000201101^2 &= 1022161444444080004 + 4000804444441612201 := 5022965888885692205 \\
1010001002^2 + 2001000101^2 &= 1020102024041004004 + 4004001404202010201 := 5024103428243014205 \\
1010101002^2 + 2001010101^2 &= 1020304034241404004 + 4004041424304030201 := 5024345458545434205 \\
1010011002^2 + 2001100101^2 &= 1020122224161044004 + 4004401614222210201 := 5024523838383254205 \\
1010002002^2 + 2002000101^2 &= 1020104044044008004 + 4008004404404010201 := 5028108448448018205 \\
1000000102^2 + 2010000001^2 &= 1000000204000010404 + 4040100004020000001 := 5040100208020010405 \\
1000100102^2 + 2010010001^2 &= 1000200214020410404 + 4040140204120020001 := 5040340418140430405 \\
1020000002^2 + 2000000201^2 &= 1040400004080000004 + 4000000804000040401 := 5040400808080040405 \\
1000010102^2 + 2010100001^2 &= 1000020204102050404 + 4040502014020200001 := 5040522218122250405 \\
1000200102^2 + 2010020001^2 &= 1000400244040810404 + 4040180404420040001 := 5040580648460850405 \\
1020100002^2 + 2000010201^2 &= 1040604014080400004 + 4000040804104060401 := 5040644818184460405 \\
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1000020102^2 + 2010200001^2 &= 1000040204404090404 + 4040904044020400001 := 5040944248424490405 \\
1001000102^2 + 2010001001^2 &= 1002001204204010404 + 4040104024021002001 := 5042105228225012405 \\
1001100102^2 + 2010011001^2 &= 1002201414224410404 + 4040144224141022001 := 5042345638365432405 \\
1021000002^2 + 2000001201^2 &= 1042441004084000004 + 4000004804001442401 := 5042445808085442405 \\
1001010102^2 + 2010101001^2 &= 1002021224306050404 + 4040506034221202001 := 5042527258527252405 \\
1000001102^2 + 2011000001^2 &= 1000002204001214404 + 4044121004022000001 := 5044123208023214405 \\
1000101102^2 + 2011010001^2 &= 1000202214221614404 + 4044161224122020001 := 5044363438343634405 \\
1020001002^2 + 2001000201^2 &= 1040402044081004004 + 4004001804402040401 := 5044403848483044405 \\
1000011102^2 + 2011100001^2 &= 1000022204123254404 + 4044523214022200001 := 5044545418145454405 \\
1020101002^2 + 2001010201^2 &= 1040606054281404004 + 4004041824506060401 := 5044647878787464405 \\
1000021102^2 + 2011200001^2 &= 1000042204445294404 + 4044925444022400001 := 5044967648467694405 \\
1000002102^2 + 2012000001^2 &= 1000004204004418404 + 4048144004024000001 := 5048148208028418405 \\
1000102102^2 + 2012010001^2 &= 1000204214424818404 + 4048184244124020001 := 5048388458548838405 \\
1020002002^2 + 2002000201^2 &= 1040404084084008004 + 4008004804804040401 := 5048408888888048405 \\
1000000202^2 + 2020000001^2 &= 1000000404000040804 + 4080400004040000001 := 5080400408040040805 \\
1000100202^2 + 2020010001^2 &= 1000200414040440804 + 4080440404140020001 := 5080640818180460805 \\
1000010202^2 + 2020100001^2 &= 1000020404104080804 + 4080804014040200001 := 5080824418144280805 \\
1001000202^2 + 2020001001^2 &= 1002001404404040804 + 4080404044041002001 := 5082405448445042805 \\
1001010202^2 + 2020101001^2 &= 1002021424508080804 + 4080808054241202001 := 5082829478749282805 \\
1000001202^2 + 2021000001^2 &= 1000002404001444804 + 4084441004042000001 := 5084443408043444805 \\
1000101202^2 + 2021010001^2 &= 1000202414241844804 + 4084481424142020001 := 5084683838383864805 \\
1000011202^2 + 2021100001^2 &= 1000022404125484804 + 4084845214042200001 := 5084867618167684805 \\
1000002202^2 + 2022000001^2 &= 1000004404004848804 + 4088484004044000001 := 5088488408048848805 \\
1100000002^2 + 2000000011^2 &= 1210000004400000004 + 4000000044000000121 := 5210000048400000125 \\
1100100002^2 + 2000010011^2 &= 1210220014400400004 + 4000040044100220121 := 5210260058500620125
\end{aligned}$$

$$\begin{aligned}
1100010002^2 + 2000100011^2 &= 1210022004500040004 + 4000400054002200121 := 5210422058502240125 \\
1100020002^2 + 2000200011^2 &= 1210044004800080004 + 4000800084004400121 := 5210844088804480125 \\
1101000002^2 + 2000001011^2 &= 1212201004404000004 + 4000004044001022121 := 5212205048405022125 \\
1101100002^2 + 2000011011^2 &= 1212421214404400004 + 4000044044121242121 := 5212465258525642125 \\
1101010002^2 + 2000101011^2 &= 1212223024504040004 + 4000404054203222121 := 5212627078707262125 \\
1100001002^2 + 2001000011^2 &= 1210002204401004004 + 4004001044022000121 := 5214003248423004125 \\
1100101002^2 + 2001010011^2 &= 1210222214601404004 + 4004041064122220121 := 5214263278723624125 \\
1100011002^2 + 2001100011^2 &= 1210024204521044004 + 4004401254024200121 := 5214425458545244125 \\
1100021002^2 + 2001200011^2 &= 1210046204841084004 + 4004801484026400121 := 5214847688867484125 \\
1100002002^2 + 2002000011^2 &= 1210004404404008004 + 4008004044044000121 := 5218008448448008125 \\
1100102002^2 + 2002010011^2 &= 1210224414804408004 + 4008044084144220121 := 5218268498948628125 \\
1110000002^2 + 2000000111^2 &= 1232100004440000004 + 4000000444000012321 := 5232100448440012325 \\
1110100002^2 + 2000010111^2 &= 1232322014440400004 + 4000040444102232321 := 5232362458542632325 \\
1110010002^2 + 2000100111^2 &= 1232122204540040004 + 4000400454022212321 := 5232522658562252325 \\
1110020002^2 + 2000200111^2 &= 1232144404840080004 + 4000800484044412321 := 5232944888884492325 \\
1111000002^2 + 2000001111^2 &= 1234321004444000004 + 4000004444001234321 := 5234325448445234325 \\
1111100002^2 + 2000011111^2 &= 1234543214444400004 + 4000044444123454321 := 5234587658567854325 \\
1111010002^2 + 2000101111^2 &= 1234343224544040004 + 4000404454223434321 := 5234747678767474325 \\
1110001002^2 + 2001000111^2 &= 1232102224441004004 + 4004001444222012321 := 5236103668663016325 \\
1110101002^2 + 2001010111^2 &= 1232324234641404004 + 4004041464324232321 := 5236365698965636325 \\
1100000102^2 + 2010000011^2 &= 1210000224400010404 + 4040100044220000121 := 5250100268620010525 \\
1100100102^2 + 2010010011^2 &= 1210220234420410404 + 4040140244320220121 := 5250360478740630525 \\
1100010102^2 + 2010100011^2 &= 1210022224502050404 + 4040502054222200121 := 5250524278724250525 \\
1101000102^2 + 2010001011^2 &= 1212201224604010404 + 4040104064221022121 := 5252305288825032525 \\
1101100102^2 + 2010011011^2 &= 1212421434624410404 + 4040144264341242121 := 5252565698965652525 \\
1100001102^2 + 2011000011^2 &= 1210002424401214404 + 4044121044242000121 := 5254123468643214525 \\
1100101102^2 + 2011010011^2 &= 1210222434621614404 + 4044161264342220121 := 5254383698963834525 \\
1120000002^2 + 2000000211^2 &= 1254400004480000004 + 4000000844000044521 := 5254400848480044525 \\
1100011102^2 + 2011100011^2 &= 1210024424523254404 + 4044523254244200121 := 5254547678767454525 \\
1120100002^2 + 2000010211^2 &= 1254624014480400004 + 4000040844104264521 := 5254664858584664525 \\
1121000002^2 + 2000001211^2 &= 1256641004484000004 + 4000004844001466521 := 5256645848485466525 \\
1100002102^2 + 2012000011^2 &= 1210004624404418404 + 4048144044264000121 := 5258148668668418525 \\
1100000202^2 + 2020000011^2 &= 1210000444400040804 + 4080400044440000121 := 5290400488840040925 \\
1100100202^2 + 2020010011^2 &= 1210220454440440804 + 4080440444540220121 := 5290660898980660925 \\
1100010202^2 + 2020100011^2 &= 1210022444504080804 + 4080804054442200121 := 5290826498946280925 \\
1100001202^2 + 2021000011^2 &= 1210002644401444804 + 4084441044462000121 := 5294443688863444925 \\
1100011202^2 + 2021100011^2 &= 1210024644525484804 + 4084845254464200121 := 5294869898989684925 \\
1100002202^2 + 2022000011^2 &= 1210004844404848804 + 4088484044484000121 := 5298488888888848925
\end{aligned}$$

$$\begin{aligned}
1000000012^2 + 2100000001^2 &= 1000000024000000144 + 4410000004200000001 := 5410000028200000145 \\
1000100012^2 + 2100010001^2 &= 1000200034002400144 + 4410042004300020001 := 5410242038302420145 \\
1000010012^2 + 2100100001^2 &= 1000020024100240144 + 4410420014200200001 := 5410440038300440145 \\
1000200012^2 + 2100020001^2 &= 1000400064004800144 + 4410084004600040001 := 5410484068604840145 \\
1000020012^2 + 2100200001^2 &= 1000040024400480144 + 4410840044200400001 := 5410880068600880145 \\
1001000012^2 + 2100001001^2 &= 1002001024024000144 + 4410004204201002001 := 5412005228225002145 \\
1001100012^2 + 2100011001^2 &= 1002201234026400144 + 4410046204321022001 := 5412247438347422145 \\
1001010012^2 + 2100101001^2 &= 1002021044124240144 + 4410424214401202001 := 5412445258525442145 \\
1001200012^2 + 2100021001^2 &= 1002401464028800144 + 4410088204641042001 := 5412489668669842145 \\
1000001012^2 + 2101000001^2 &= 1000002024001024144 + 4414201004202000001 := 5414203028203024145 \\
1000101012^2 + 2101010001^2 &= 1000202034203424144 + 4414243024302020001 := 5414445058505444145 \\
1000011012^2 + 2101100001^2 &= 1000022024121264144 + 4414621214202200001 := 5414643238323464145 \\
1000002012^2 + 2102000001^2 &= 1000004024004048144 + 4418404004204000001 := 5418408028208048145 \\
1000012012^2 + 2102100001^2 &= 1000024024144288144 + 4418824414204200001 := 5418848438348488145 \\
1010000012^2 + 2100000101^2 &= 1020100024240000144 + 4410000424200010201 := 5430100448440010345 \\
1010100012^2 + 2100010101^2 &= 1020302034242400144 + 4410042424302030201 := 5430344458544430345 \\
1010010012^2 + 2100100101^2 &= 1020120224340240144 + 4410420434220210201 := 5430540658560450345 \\
1010200012^2 + 2100020101^2 &= 1020504064244800144 + 4410084424604050201 := 5430588488848850345 \\
1010020012^2 + 2100200101^2 &= 1020140424640480144 + 4410840464240410201 := 5430980888880890345 \\
1011000012^2 + 2100001101^2 &= 1022121024264000144 + 4410004624201212201 := 5432125648465212345 \\
1011100012^2 + 2100011101^2 &= 1022323234266400144 + 4410046624323232201 := 5432369858589632345 \\
1011010012^2 + 2100101101^2 &= 1022141244364240144 + 4410424634421412201 := 5432565878785652345 \\
1010001012^2 + 2101000101^2 &= 1020102044241024144 + 4414201424402010201 := 5434303468643034345 \\
1010101012^2 + 2101010101^2 &= 1020304054443424144 + 4414243444504030201 := 5434547498947454345 \\
1010011012^2 + 2101100101^2 &= 1020122244361264144 + 4414621634422210201 := 5434743878783474345 \\
1010002012^2 + 2102000101^2 &= 1020104064244048144 + 4418404424604010201 := 5438508488848058345 \\
1200000002^2 + 2000000021^2 &= 1440000004800000004 + 4000000084000000441 := 5440000088800000445 \\
1200100002^2 + 2000010021^2 &= 1440240014800400004 + 4000040084100420441 := 5440280098900820445 \\
1200010002^2 + 2000100021^2 &= 1440024004900040004 + 4000400094004200441 := 5440424098904240445 \\
1201000002^2 + 2000001021^2 &= 1442401004804000004 + 4000004084001042441 := 5442405088805042445 \\
1201100002^2 + 2000011021^2 &= 1442641214804400004 + 4000044084121462441 := 5442685298925862445 \\
1200001002^2 + 2001000021^2 &= 1440002404801004004 + 4004001084042000441 := 5444003488843004445 \\
1200011002^2 + 2001100021^2 &= 1440026404921044004 + 4004401294046200441 := 5444427698967244445 \\
1200002002^2 + 2002000021^2 &= 1440004804804008004 + 4008004084084000441 := 5448008888888008445 \\
1020000012^2 + 2100000201^2 &= 1040400024480000144 + 4410000844200040401 := 5450400868680040545 \\
1020100012^2 + 2100010201^2 &= 1040604034482400144 + 4410042844304060401 := 5450646878786460545 \\
1000000112^2 + 2110000001^2 &= 1000000224000012544 + 4452100004220000001 := 5452100228220012545 \\
1000100112^2 + 2110010001^2 &= 1000200234022412544 + 4452142204320020001 := 5452342438342432545
\end{aligned}$$

$$\begin{aligned}
1000010112^2 + 2110100001^2 &= 1000020224102252544 + 4452522014220200001 := 5452542238322452545 \\
1000200112^2 + 2110020001^2 &= 1000400264044812544 + 4452184404620040001 := 5452584668664852545 \\
1000020112^2 + 2110200001^2 &= 1000040224404492544 + 4452944044220400001 := 5452984268624892545 \\
1001000112^2 + 2110001001^2 &= 1002001224224012544 + 4452104224221002001 := 5454105448445014545 \\
1001100112^2 + 2110011001^2 &= 1002201434246412544 + 4452146424341022001 := 5454347858587434545 \\
1001010112^2 + 2110101001^2 &= 1002021244326252544 + 4452526234421202001 := 5454547478747454545 \\
1000001112^2 + 2111000001^2 &= 1000002224001236544 + 4456321004222000001 := 5456323228223236545 \\
1000101112^2 + 2111010001^2 &= 1000202234223636544 + 4456363224322020001 := 5456565458545656545 \\
1000011112^2 + 2111100001^2 &= 1000022224123476544 + 4456743214222200001 := 5456765438345676545 \\
1210000002^2 + 2000000121^2 &= 1464100004840000004 + 4000000484000014641 := 5464100488840014645 \\
1210100002^2 + 2000010121^2 &= 1464342014840400004 + 4000040484102434641 := 5464382498942834645 \\
1210010002^2 + 2000100121^2 &= 1464124204940040004 + 4000400494024214641 := 5464524698964254645 \\
1211000002^2 + 2000001121^2 &= 1466521004844000004 + 4000004484001256641 := 5466525488845256645 \\
1220000002^2 + 2000000221^2 &= 1488400004880000004 + 4000000884000048841 := 5488400888880048845 \\
1220100002^2 + 2000010221^2 &= 1488644014880400004 + 4000040884104468841 := 5488684898984868845 \\
1000000212^2 + 2120000001^2 &= 1000000424000044944 + 4494400004240000001 := 5494400428240044945 \\
1000100212^2 + 2120010001^2 &= 1000200434042444944 + 4494442404340020001 := 5494642838382464945 \\
1000010212^2 + 2120100001^2 &= 1000020424104284944 + 4494824014240200001 := 5494844438344484945 \\
1001000212^2 + 2120001001^2 &= 1002001424424044944 + 4494404244241002001 := 5496405668665046945 \\
1001010212^2 + 2120101001^2 &= 1002021444528284944 + 4494828254441202001 := 5496849698969486945 \\
1000001212^2 + 2121000001^2 &= 1000002424001468944 + 4498641004242000001 := 5498643428243468945 \\
1000101212^2 + 2121010001^2 &= 1000202434243868944 + 4498683424342020001 := 5498885858585888945 \\
1000000022^2 + 2200000001^2 &= 1000000044000000484 + 4840000004400000001 := 5840000048400000485 \\
1000100022^2 + 2200010001^2 &= 1000200054004400484 + 4840044004500020001 := 5840244058504420485 \\
1000010022^2 + 2200100001^2 &= 1000020044100440484 + 4840440014400200001 := 5840460058500640485 \\
1000200022^2 + 2200020001^2 &= 1000400084008800484 + 4840088004800040001 := 5840488088808840485 \\
1001000022^2 + 2200001001^2 &= 1002001044044000484 + 4840004404401002001 := 5842005448445002485 \\
1001100022^2 + 2200011001^2 &= 1002201254048400484 + 4840048404521022001 := 5842249658569422485 \\
1001010022^2 + 2200101001^2 &= 1002021064144440484 + 4840444414601202001 := 5842465478745642485 \\
1000001022^2 + 2201000001^2 &= 1000002044001044484 + 4844401004402000001 := 5844403048403044485 \\
1000101022^2 + 2201010001^2 &= 1000202054205444484 + 4844445024502020001 := 5844647078707464485 \\
1000011022^2 + 2201100001^2 &= 1000022044121484484 + 4844841214402200001 := 5844863258523684485 \\
1000002022^2 + 2202000001^2 &= 1000004044004088484 + 4848804004404000001 := 5848808048408088485 \\
1010000022^2 + 2200000101^2 &= 1020100044440000484 + 4840000444400010201 := 5860100488840010685 \\
1010100022^2 + 2200010101^2 &= 1020302054444400484 + 4840044444502030201 := 5860346498946430685 \\
1010010022^2 + 2200100101^2 &= 1020120244540440484 + 4840440454420210201 := 5860560698960650685 \\
1011000022^2 + 2200001101^2 &= 1022121044484000484 + 4840004844401212201 := 5862125888885212685 \\
1000000122^2 + 2210000001^2 &= 1000000244000014884 + 4884100004420000001 := 5884100248420014885
\end{aligned}$$



$$\begin{aligned}
1000100122^2 + 2210010001^2 &= 1000200254024414884 + 4884144204520020001 := 5884344458544434885 \\
1000010122^2 + 2210100001^2 &= 1000020244102454884 + 4884542014420200001 := 5884562258522654885 \\
1000200122^2 + 2210020001^2 &= 1000400284048814884 + 4884188404820040001 := 5884588688868854885 \\
1001000122^2 + 2210001001^2 &= 1002001244244014884 + 4884104424421002001 := 5886105668665016885 \\
1001010122^2 + 2210101001^2 &= 1002021264346454884 + 4884546434621202001 := 5886567698967656885 \\
1000001122^2 + 2211000001^2 &= 1000002244001258884 + 4888521004422000001 := 5888523248423258885 \\
1000101122^2 + 2211010001^2 &= 1000202254225658884 + 4888565224522020001 := 5888767478747678885 \\
1000011122^2 + 2211100001^2 &= 1000022244123698884 + 4888963214422200001 := 5888985458545898885
\end{aligned}$$

#### • Non-Palindromic Sum

$$\begin{aligned}
1000120001^2 + 1000210001^2 &= 1000240016400240001 + 1000420046100420001 := 2000660062500660002 \\
1000030001^2 + 1000300001^2 &= 1000060002900060001 + 1000600092000600001 := 2000660094900660002 \\
1000301001^2 + 1001030001^2 &= 1000602092601602001 + 1002061062902060001 := 2002663155503662002 \\
1000211001^2 + 1001120001^2 &= 1000422046521422001 + 1002241256402240001 := 2002663302923662002 \\
1000121001^2 + 1001210001^2 &= 1000242016641242001 + 1002421466102420001 := 2002663482743662002 \\
1000311001^2 + 1001130001^2 &= 1000622098721622001 + 1002261278902260001 := 2002883377623882002 \\
1001111001^2 + 1001111001^2 &= 1002223236323222001 + 1002223236323222001 := 2004446472646444002 \\
1000202001^2 + 1002020001^2 &= 1000404042804404001 + 1004044082404040001 := 2004448125208444002 \\
1001121001^2 + 1001211001^2 &= 1002243258643242001 + 1002423468523422001 := 2004666727166664002 \\
1001031001^2 + 1001301001^2 &= 1002063064963062001 + 1002603694603602001 := 2004666759566664002 \\
1000212001^2 + 1002120001^2 &= 1000424046944424001 + 1004244496404240001 := 2004668543348664002 \\
1000122001^2 + 1002210001^2 &= 1000244016884244001 + 1004424886104420001 := 2004668902988664002 \\
1001002001^2 + 1002001001^2 &= 1002005006006004001 + 1004006006005002001 := 2006011012011006002 \\
1000003001^2 + 1003000001^2 &= 1000006002009006001 + 1006009002006000001 := 2006015004015006002 \\
1001102001^2 + 1002011001^2 &= 1002205216406204001 + 1004026046125022001 := 2006231262531226002 \\
1001012001^2 + 1002101001^2 &= 1002025026146024001 + 1004206416205202001 := 2006231442351226002 \\
1000103001^2 + 1003010001^2 &= 1000206012609206001 + 1006029062106020001 := 2006235074715226002 \\
1000013001^2 + 1003100001^2 &= 1000026002169026001 + 1006209612006200001 := 2006235614175226002 \\
1001202001^2 + 1002021001^2 &= 1002405446806404001 + 1004046086445042001 := 2006451533251446002 \\
1001112001^2 + 1002111001^2 &= 1002225238546224001 + 1004226458325222001 := 2006451696871446002 \\
1001022001^2 + 1002201001^2 &= 1002045046486044001 + 1004406846405402001 := 2006451892891446002 \\
1000113001^2 + 1003110001^2 &= 1000226014769226001 + 1006229674106220001 := 2006455688875446002 \\
1000210101^2 + 1010120001^2 &= 1000420246142430201 + 1020342416420240001 := 2020762662562670202 \\
1000120101^2 + 1010210001^2 &= 1000240216424250201 + 1020524246120420001 := 2020764462544670202 \\
1000310101^2 + 1010130001^2 &= 1000620298162630201 + 1020362618920260001 := 2020982917082890202 \\
1000130101^2 + 1010310001^2 &= 1000260218926270201 + 1020726298120620001 := 2020986517046890202
\end{aligned}$$

$$\begin{aligned}
&1001200101^2 + 1010021001^2 = 1002401642242410201 + 1020142422461042001 := 2022544064703452202 \\
&1001020101^2 + 1010201001^2 = 1002041242606050201 + 1020506062421402001 := 2022547305027452202 \\
&1001300101^2 + 1010031001^2 = 1002601892262610201 + 1020162622981062001 := 2022764515243672202 \\
&1001210101^2 + 1010121001^2 = 1002421666344430201 + 1020344436661242001 := 2022766103005672202 \\
&1001120101^2 + 1010211001^2 = 1002241456626250201 + 1020526266541422001 := 2022767723167672202 \\
&1000301101^2 + 1011030001^2 = 1000602292661812201 + 1022181662922060001 := 2022783955583872202 \\
&1000211101^2 + 1011120001^2 = 1000422246563632201 + 1022363656422240001 := 2022785902985872202 \\
&1000121101^2 + 1011210001^2 = 1000242216665452201 + 1022545666122420001 := 2022787882787872202 \\
&1000311101^2 + 1011130001^2 = 1000622298783832201 + 1022383878922260001 := 2023006177706092202 \\
&1002010101^2 + 1010102001^2 = 1004024242506030201 + 1020306052424204001 := 2024330294930234202 \\
&1000012101^2 + 1012100001^2 = 1000024202146434201 + 1024346412024200001 := 2024370614170634202 \\
&1002110101^2 + 1010112001^2 = 1004224654526230201 + 1020326254564224001 := 2024550909090454202 \\
&1002020101^2 + 1010202001^2 = 1004044282808050201 + 1020508082824404001 := 2024552365632454202 \\
&1001201101^2 + 1011021001^2 = 1002403644643612201 + 1022163464463042001 := 2024567109106654202 \\
&1001111101^2 + 1011111001^2 = 1002223436545432201 + 1022345456343222001 := 2024568892888654202 \\
&1001021101^2 + 1011201001^2 = 1002043244647252201 + 1022527464423402001 := 2024570709070654202 \\
&1012020001^2 + 1000202101^2 = 1024184482424040001 + 1000404242844814201 := 2024588725268854202 \\
&1000112101^2 + 1012110001^2 = 1000224214566634201 + 1024366654124220001 := 2024590868690854202 \\
&1000022101^2 + 1012200001^2 = 1000044202488454201 + 1024548842024400001 := 2024593044512854202 \\
&1002120101^2 + 1010212001^2 = 1004244696828250201 + 1020528286964424001 := 2024772983792674202 \\
&1001301101^2 + 1011031001^2 = 1002603894863812201 + 1022183684983062001 := 2024787579846874202 \\
&1001211101^2 + 1011121001^2 = 1002423668765632201 + 1022365678663242001 := 2024789347428874202 \\
&1001121101^2 + 1011211001^2 = 1002243458867452201 + 1022547688543422001 := 2024791147410874202 \\
&1000212101^2 + 1012120001^2 = 1000424246986834201 + 1024386896424240001 := 2024811143411074202 \\
&1003000101^2 + 1010003001^2 = 1006009202606010201 + 1020106062029006001 := 2026115264635016202 \\
&1002001101^2 + 1011002001^2 = 1004006206405212201 + 1022125046026004001 := 2026131252431216202 \\
&1001002101^2 + 1012001001^2 = 1002005206206414201 + 1024146026025002001 := 2026151232231416202 \\
&1000003101^2 + 1013000001^2 = 1000006202009616201 + 1026169002026000001 := 2026175204035616202 \\
&1003100101^2 + 1010013001^2 = 1006209812626210201 + 1020126262189026001 := 2026336074815236202 \\
&1003010101^2 + 1010103001^2 = 1006029262708030201 + 1020308072629206001 := 2026337335337236202 \\
&1002101101^2 + 1011012001^2 = 1004206616625412201 + 1022145266166024001 := 2026351882791436202 \\
&1002011101^2 + 1011102001^2 = 1004026246527232201 + 1022327256426204001 := 2026353502953436202 \\
&1001102101^2 + 1012011001^2 = 1002205416626614201 + 1024166266145022001 := 2026371682771636202 \\
&1001012101^2 + 1012101001^2 = 1002025226348434201 + 1024348436225202001 := 2026373662573636202 \\
&1000103101^2 + 1013010001^2 = 1000206212629816201 + 1026189262126020001 := 2026395474755836202 \\
&1003110101^2 + 1010113001^2 = 1006229874728230201 + 1020328274789226001 := 2026558149517456202 \\
&1002111101^2 + 1011112001^2 = 1004226658747432201 + 1022347478566224001 := 2026574137313656202 \\
&1002021101^2 + 1011202001^2 = 1004046286849252201 + 1022529486826404001 := 2026575773675656202
\end{aligned}$$



$$\begin{aligned}
&1001112101^2 + 1012111001^2 = 1002225438768634201 + 1024368678345222001 := 2026594117113856202 \\
&1010110101^2 + 1010110101^2 = 1020322416142230201 + 1020322416142230201 := 2040644832284460402 \\
&1000200201^2 + 1020020001^2 = 1000400442080440401 + 1040440802440040001 := 2040841244520480402 \\
&1010120101^2 + 1010210101^2 = 1020342618444250201 + 1020524448162430201 := 2040867066606680402 \\
&1010030101^2 + 1010300101^2 = 1020160804926070201 + 1020706294080610201 := 2040867099006680402 \\
&1000210201^2 + 1020120001^2 = 1000420446184460401 + 1040644816440240001 := 2041065262624700402 \\
&1000120201^2 + 1020210001^2 = 1000240416448280401 + 1040828446140420001 := 2041068862588700402 \\
&1001100201^2 + 1020011001^2 = 1002201612442240401 + 1040422442161022001 := 2042624054603262402 \\
&1010201101^2 + 1011020101^2 = 1020506264461612201 + 1022161644626050201 := 2042667909087662402 \\
&1010111101^2 + 1011110101^2 = 1020324436363432201 + 1022343636344230201 := 2042668072707662402 \\
&1010021101^2 + 1011200101^2 = 1020142624465252201 + 1022525644262410201 := 2042668268727662402 \\
&1001200201^2 + 1020021001^2 = 1002401842482440401 + 1040442842481042001 := 2042844684963482402 \\
&1001110201^2 + 1020111001^2 = 1002221634546260401 + 1040626454361222001 := 2042848088907482402 \\
&1000201201^2 + 1021020001^2 = 1000402442481842401 + 1042481842442040001 := 2042884284923882402 \\
&1000111201^2 + 1021110001^2 = 1000222414365662401 + 1042665634142220001 := 2042888048507882402 \\
&1010211101^2 + 1011120101^2 = 1020526468583632201 + 1022363858646250201 := 2042890327229882402 \\
&1010121101^2 + 1011210101^2 = 1020344638685452201 + 1022545868364430201 := 2042890507049882402 \\
&1010031101^2 + 1011300101^2 = 1020162824987272201 + 1022727894282610201 := 2042890719269882402 \\
&1000021201^2 + 1021200001^2 = 1000042402449482401 + 1042849442042400001 := 2042891844491882402 \\
&1001210201^2 + 1020121001^2 = 1002421866586460401 + 1040646856681242001 := 2043068723267702402 \\
&1000121201^2 + 1021210001^2 = 1000242416689682401 + 1042869866142420001 := 2043112282832102402 \\
&1011001101^2 + 1011001101^2 = 1022123226223212201 + 1022123226223212201 := 2044246452446424402 \\
&1011011101^2 + 1011101101^2 = 1022143446345232201 + 1022325436443412201 := 2044468882788644402 \\
&1010102101^2 + 1012010101^2 = 1020306254444614201 + 1024164444526030201 := 2044470698970644402 \\
&1010012101^2 + 1012100101^2 = 1020124444166434201 + 1024346614444210201 := 2044471058610644402 \\
&1002100201^2 + 1020012001^2 = 1004204812844240401 + 1040424482184024001 := 2044629295028264402 \\
&1002010201^2 + 1020102001^2 = 1004024442908060401 + 1040608092444204001 := 2044632535352264402 \\
&1001101201^2 + 1021011001^2 = 1002203614643642401 + 1042463464163022001 := 2044667078806664402 \\
&1001011201^2 + 1021101001^2 = 1002023424527462401 + 1042647254243202001 := 2044670678770664402 \\
&1011111101^2 + 1011111101^2 = 1022345658565432201 + 1022345658565432201 := 2044691317130864402 \\
&1011021101^2 + 1011201101^2 = 1022163666667252201 + 1022527666663612201 := 2044691333330864402 \\
&1010202101^2 + 1012020101^2 = 1020508284864814201 + 1024184684828050201 := 2044692969692864402 \\
&1010112101^2 + 1012110101^2 = 1020326456586634201 + 1024366856546230201 := 2044693313132864402 \\
&1000012201^2 + 1022100001^2 = 1000024402148864401 + 1044688412044200001 := 2044712814193064402 \\
&1002110201^2 + 1020112001^2 = 1004224854948260401 + 1040628494584224001 := 2044853349532484402 \\
&1001201201^2 + 1021021001^2 = 1002403844883842401 + 1042483884483042001 := 2044887729366884402 \\
&1001111201^2 + 1021111001^2 = 1002223636767662401 + 1042667676363222001 := 2044891313130884402 \\
&1011002101^2 + 1012001101^2 = 1022125248226414201 + 1024146228425212201 := 2046271476651626402
\end{aligned}$$

$$\begin{aligned}
&1010003101^2 + 1013000101^2 = 1020106264029616201 + 1026169204626010201 := 2046275468655626402 \\
&1002001201^2 + 1021002001^2 = 1004006406805442401 + 1042445086046004001 := 2046451492851446402 \\
&1001002201^2 + 1022001001^2 = 1002005406406844401 + 1044486046045002001 := 2046491452451846402 \\
&1011102101^2 + 1012011101^2 = 1022327458646614201 + 1024166468547232201 := 2046493927193846402 \\
&1011012101^2 + 1012101101^2 = 1022145468368434201 + 1024348638645412201 := 2046494107013846402 \\
&1010103101^2 + 1013010101^2 = 1020308274649816201 + 1026189464728030201 := 2046497739377846402 \\
&1002011201^2 + 1021102001^2 = 1004026446929462401 + 1042649296446204001 := 2046675743375666402 \\
&1010000201^2 + 1020000101^2 = 1020100406020040401 + 1040400206040010201 := 2060500612060050602 \\
&1010100201^2 + 1020010101^2 = 1020302416060240401 + 1040420606142030201 := 2060723022202270602 \\
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&1010110201^2 + 1020110101^2 = 1020322618164260401 + 1040624618162230201 := 2060947236326490602 \\
&1010020201^2 + 1020200101^2 = 1020140806428080401 + 1040808246080410201 := 2060949052508490602 \\
&1000100301^2 + 1030010001^2 = 1000200612060290601 + 1060920602160020001 := 2061121214220310602 \\
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\end{aligned}$$



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1101101211^2 + 1121011011^2 &= 1212423876865666521 + 1256665686783242121 := 2469089563648908642 \\
1101011211^2 + 1121101011^2 &= 1212225686747686521 + 1256867476865222121 := 2469093163612908642 \\
1110112111^2 + 1112110111^2 &= 1232348898988876321 + 1236788898988432321 := 2469137797977308642 \\
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1001002121^2 + 1212001001^2 &= 1002005246246498641 + 1468946426425002001 := 2470951672671500642 \\
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1021001021^2 + 1201001201^2 &= 1042443084883042441 + 1442403884803442401 := 2484846969686484842
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\end{aligned}$$



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1001110002^2 + 2000111001^2 &= 1002221236104440004 + 4000444016321222001 := 5002665252425662005 \\
1001210002^2 + 2000121001^2 &= 1002421468104840004 + 4000484018641242001 := 5002905486746082005 \\
1001120002^2 + 2000211001^2 &= 1002241258404480004 + 4000844048521422001 := 5003085306925902005 \\
1002000002^2 + 2000002001^2 &= 1004004004008000004 + 4000008004004004001 := 5004012008012004005 \\
1002100002^2 + 2000012001^2 &= 1004204414008400004 + 4000048004144024001 := 5004252418152424005 \\
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1002110002^2 + 2000112001^2 &= 1004224456108440004 + 4000448016544224001 := 5004672472652664005 \\
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1001101002^2 + 2001011001^2 &= 1002203216205404004 + 4004045026123022001 := 5006248242328426005 \\
1001011002^2 + 2001101001^2 &= 1002023026125044004 + 4004405216203202001 := 5006428242328246005 \\
1001201002^2 + 2001021001^2 &= 1002403446405804004 + 4004085046443042001 := 5006488492848846005 \\
1001111002^2 + 2001111001^2 &= 1002223238325444004 + 4004445238323222001 := 5006668476648666005 \\
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1000112002^2 + 2002110001^2 &= 1000224016544448004 + 4008444456104220001 := 5008668472648668005 \\
1002021002^2 + 2001202001^2 &= 1004046088449084004 + 4004809448806404001 := 5008855537255488005 \\
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1000122002^2 + 2002210001^2 &= 1000244018884488004 + 4008844888104420001 := 5009088906988908005 \\
1001002002^2 + 2002001001^2 &= 1002005008008008004 + 4008008008005002001 := 5010013016013010005 \\
1001102002^2 + 2002011001^2 &= 1002205218408408004 + 4008048048125022001 := 5010253266533430005 \\
1001012002^2 + 2002101001^2 &= 1002025028148048004 + 4008408418205202001 := 5010433446353250005 \\
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1001022002^2 + 2002201001^2 &= 1002045048488088004 + 4008808848405402001 := 5010853896893490005 \\
1010110002^2 + 2000110101^2 &= 1020322216140440004 + 4000440416122230201 := 5020762632262670205 \\
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\end{aligned}$$



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\end{aligned}$$



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1102210002^2 + 2000122011^2 &= 1214866888508840004 + 4000488058886684121 := 5215354947395524125 \\
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\end{aligned}$$



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1110100112^2 + 2110010111^2 &= 1232322258662412544 + 4452142668522232321 := 5684464927184644865 \\
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2000011012^2 + 2101100002^2 &= 4000044048121264144 + 4414621218404400004 := 8414665266525664148 \\
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2000002012^2 + 2102000002^2 &= 4000008048004048144 + 4418404008408000004 := 8418412056412048148 \\
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2010010012^2 + 2100100102^2 &= 4040140248340240144 + 4410420438420410404 := 8450560686760650548 \\
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2000100112^2 + 2110010002^2 &= 4000400458022412544 + 4452142208540040004 := 8452542666562452548 \\
2000010112^2 + 2110100002^2 &= 4000040448102252544 + 4452522018440400004 := 8452562466542652548
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2002000212^2 + 2120002002^2 &= 4008004848848044944 + 4494408488484008004 := 8502413337332052948 \\
2000000022^2 + 2200000002^2 &= 4000000088000000484 + 4840000008800000004 := 8840000096800000488
\end{aligned}$$

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2010010022^2 + 2200100102^2 &= 4040140288540440484 + 4840440458820410404 := 8880580747360850888 \\
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1000010003^2 + 3000100001^2 &= 1000200061000600009 + 9000600016000200001 := 10000620022100260010 \\
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\end{aligned}$$

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1010111003^2 + 3001110101^2 &= 1020324238381666009 + 9006661838324230201 := 10026986076705896210 \\
1011001003^2 + 3001001101^2 &= 1022123028067006009 + 9006007608203212201 := 10028130636270218210 \\
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\end{aligned}$$

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\end{aligned}$$



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1110001103^2 + 3011000111^2 &= 1232102448661216609 + 9066121668442012321 := 10298224117103228930 \\
1110101103^2 + 3011010111^2 &= 1232324458881816609 + 9066181888544232321 := 10298506347426048930 \\
1110011103^2 + 3011100111^2 &= 1232124648783276609 + 9066723878464212321 := 10298848527247488930 \\
1000000013^2 + 3100000001^2 &= 1000000026000000169 + 9610000006200000001 := 10610000032200000170 \\
1000100013^2 + 3100010001^2 &= 1000200036002600169 + 9610062006300020001 := 10610262042302620170 \\
1000010013^2 + 3100100001^2 &= 1000020026100260169 + 9610620016200200001 := 10610640042300460170 \\
1000110013^2 + 3100110001^2 &= 1000220038102860169 + 9610682018300220001 := 10610902056403080170 \\
1001000013^2 + 3100001001^2 &= 1002001026026000169 + 9610006206201002001 := 10612007232227002170 \\
1001100013^2 + 3100011001^2 &= 1002201236028600169 + 9610068206321022001 := 10612269442349622170 \\
1001010013^2 + 3100101001^2 &= 1002021046126260169 + 9610626216401202001 := 10612647262527462170 \\
1001110013^2 + 3100111001^2 &= 1002221258128860169 + 9610688218521222001 := 10612909476650082170 \\
1000001013^2 + 3101000001^2 &= 1000002026001026169 + 9616201006202000001 := 10616203032203026170 \\
1000101013^2 + 3101010001^2 &= 1000202036203626169 + 9616263026302020001 := 10616465062505646170 \\
1000011013^2 + 3101100001^2 &= 1000022026121286169 + 9616821216202200001 := 10616843242323486170 \\
1000111013^2 + 3101110001^2 &= 1000222038323886169 + 9616883238302220001 := 10617105276626106170 \\
1001001013^2 + 3101001001^2 &= 1002003028027026169 + 9616207208203002001 := 10618210236230028170 \\
1001101013^2 + 3101011001^2 &= 1002203238229626169 + 9616269228323022001 := 10618472466552648170 \\
1001011013^2 + 3101101001^2 &= 1002023048147286169 + 9616827418403202001 := 10618850466550488170
\end{aligned}$$



$$\begin{aligned}
1010000013^2 + 3100000101^2 &= 1020100026260000169 + 9610000626200010201 := 10630100652460010370 \\
1010100013^2 + 3100010101^2 &= 1020302036262600169 + 9610062626302030201 := 10630364662564630370 \\
1010010013^2 + 3100100101^2 &= 1020120226360260169 + 9610620636220210201 := 10630740862580470370 \\
1010110013^2 + 3100110101^2 &= 1020322238362860169 + 9610682638322230201 := 10631004876685090370 \\
1011000013^2 + 3100001101^2 &= 1022121026286000169 + 9610006826201212201 := 10632127852487212370 \\
1011100013^2 + 3100011101^2 &= 1022323236288600169 + 9610068826323232201 := 10632392062611832370 \\
1011010013^2 + 3100101101^2 &= 1022141246386260169 + 9610626836421412201 := 10632768082807672370 \\
1011110013^2 + 3100111101^2 &= 1022343458388860169 + 9610688838543432201 := 10633032296932292370 \\
1010001013^2 + 3101000101^2 &= 1020102046261026169 + 9616201626402010201 := 10636303672663036370 \\
1010101013^2 + 3101010101^2 &= 1020304056463626169 + 9616263646504030201 := 10636567702967656370 \\
1010011013^2 + 3101100101^2 &= 1020122246381286169 + 9616821836422210201 := 10636944082803496370 \\
1010111013^2 + 3101110101^2 &= 1020324258583886169 + 9616883858524230201 := 10637208117108116370 \\
1011001013^2 + 3101001101^2 &= 1022123048287026169 + 9616207828403212201 := 10638330876690238370 \\
1011101013^2 + 3101011101^2 &= 1022325258489626169 + 9616269848525232201 := 10638595107014858370 \\
1000000113^2 + 3110000001^2 &= 1000000226000012769 + 9672100006220000001 := 10672100232220012770 \\
1000100113^2 + 3110010001^2 &= 1000200236022612769 + 9672162206320020001 := 10672362442342632770 \\
1000010113^2 + 3110100001^2 &= 1000020226102272769 + 9672722016220200001 := 10672742242322472770 \\
1000110113^2 + 3110110001^2 &= 1000220238124872769 + 9672784218320220001 := 10673004456445092770 \\
1001000113^2 + 3110001001^2 &= 1002001226226012769 + 9672106226221002001 := 10674107452447014770 \\
1001100113^2 + 3110011001^2 &= 1002201436248612769 + 9672168426341022001 := 10674369862589634770 \\
1001010113^2 + 3110101001^2 &= 1002021246328272769 + 9672728236421202001 := 10674749482749474770 \\
1000001113^2 + 3111000001^2 &= 1000002226001238769 + 9678321006222000001 := 10678323232223238770 \\
1000101113^2 + 3111010001^2 &= 1000202236223838769 + 9678383226322020001 := 10678585462545858770 \\
1000011113^2 + 3111100001^2 &= 1000022226123498769 + 9678943216222200001 := 10678965442345698770 \\
1001001113^2 + 3111001001^2 &= 1002003228227238769 + 9678327228223002001 := 10680330456450240770 \\
1001101113^2 + 3111011001^2 &= 1002203438449838769 + 9678389448343022001 := 10680592886792860770 \\
1001011113^2 + 3111101001^2 &= 1002023248349498769 + 9678949438423202001 := 10680972686772700770 \\
1010000113^2 + 3110000101^2 &= 1020100228260012769 + 9672100628220010201 := 10692200856480022970 \\
1010100113^2 + 3110010101^2 &= 1020302238282612769 + 9672162828322030201 := 10692465066604642970 \\
1010010113^2 + 3110100101^2 &= 1020120428362272769 + 9672722638240210201 := 10692843066602482970 \\
1011000113^2 + 3110001101^2 &= 1022121228486012769 + 9672106848221212201 := 10694228076707224970 \\
1011010113^2 + 3110101101^2 &= 1022141448588272769 + 9672728858441412201 := 10694870307029684970 \\
1010001113^2 + 3111000101^2 &= 1020102248261238769 + 9678321628422010201 := 10698423876683248970 \\
1010101113^2 + 3111010101^2 &= 1020304258483838769 + 9678383848524030201 := 10698688107007868970 \\
1010011113^2 + 3111100101^2 &= 1020122448383498769 + 9678943838442210201 := 10699066286825708970 \\
1100000013^2 + 3100000011^2 &= 1210000028600000169 + 9610000068200000121 := 10820000096800000290 \\
1100100013^2 + 3100010011^2 &= 1210220038602600169 + 9610062068300220121 := 10820282106902820290 \\
1100010013^2 + 3100100011^2 &= 1210022028700260169 + 9610620078202200121 := 10820642106902460290
\end{aligned}$$

$$\begin{aligned}
1101000013^2 + 3100001011^2 &= 1212201028626000169 + 9610006268201022121 := 10822207296827022290 \\
1101100013^2 + 3100011011^2 &= 1212421238628600169 + 9610068268321242121 := 10822489506949842290 \\
1101010013^2 + 3100101011^2 &= 1212223048726260169 + 9610626278403222121 := 10822849327129482290 \\
1100001013^2 + 3101000011^2 &= 1210002228601026169 + 9616201068222000121 := 10826203296823026290 \\
1100101013^2 + 3101010011^2 &= 1210222238803626169 + 9616263088322220121 := 10826485327125846290 \\
1100011013^2 + 3101100011^2 &= 1210024228721286169 + 9616821278224200121 := 10826845506945486290 \\
1110000013^2 + 3100000111^2 &= 1232100028860000169 + 9610000688200012321 := 10842100717060012490 \\
1110100013^2 + 3100010111^2 &= 1232322038862600169 + 9610062688302232321 := 10842384727164832490 \\
1110010013^2 + 3100100111^2 &= 1232122228960260169 + 9610620698222212321 := 10842742927182472490 \\
1111000013^2 + 3100001111^2 &= 1234321028886000169 + 9610006888201234321 := 10844327917087234490 \\
1111100013^2 + 3100011111^2 &= 1234543238888600169 + 9610068888323454321 := 10844612127212054490 \\
1111010013^2 + 3100101111^2 &= 1234343248986260169 + 9610626898423434321 := 10844970147409694490 \\
1110001013^2 + 3101000111^2 &= 1232102248861026169 + 9616201688422012321 := 10848303937283038490 \\
1110011013^2 + 3101100111^2 &= 1232124448981286169 + 9616821898444212321 := 10848946347425498490 \\
1100000113^2 + 3110000011^2 &= 1210000248600012769 + 9672100068420000121 := 10882100317020012890 \\
1100100113^2 + 3110010011^2 &= 1210220258622612769 + 9672162268520220121 := 10882382527142832890 \\
1100010113^2 + 3110100011^2 &= 1210022248702272769 + 9672722078422200121 := 10882744327124472890 \\
1101000113^2 + 3110001011^2 &= 1212201248826012769 + 9672106288421022121 := 10884307537247034890 \\
1101100113^2 + 3110011011^2 &= 1212421458848612769 + 9672168488541242121 := 10884589947389854890 \\
1101010113^2 + 3110101011^2 &= 1212223268928272769 + 9672728298623222121 := 10884951567551494890 \\
1100001113^2 + 3111000011^2 &= 1210002448601238769 + 9678321068442000121 := 10888323517043238890 \\
1100101113^2 + 3111010011^2 &= 1210222458823838769 + 9678383288542220121 := 10888605747366058890 \\
1100011113^2 + 3111100011^2 &= 1210024448723498769 + 9678943278444200121 := 10888967727167698890
\end{aligned}$$

## 2.11 Eleven Digits Expressions

This section brings **palindromic-type squared expressions** having eleven digits. Final sums palindromic and non-palindromic are given in separately.

### • Palindromic Sum

$$\begin{aligned}
1000000001^2 + 1000000001^2 &= 100000000020000000001 + 100000000020000000001 := 200000000040000000002 \\
10000100001^2 + 10000100001^2 &= 100002000030000200001 + 100002000030000200001 := 200004000060000400002 \\
10000010001^2 + 10001000001^2 &= 100000200020100020001 + 100020001020002000001 := 200020201040102020002 \\
10000110001^2 + 10001100001^2 &= 100002200032100220001 + 100022001230002200001 := 200024201262102420002 \\
10001010001^2 + 10001010001^2 &= 100020201040102020001 + 100020201040102020001 := 200040402080204040002 \\
10000020001^2 + 10002000001^2 &= 100000400020400040001 + 100040004020004000001 := 200040404040404040002 \\
10000120001^2 + 10002100001^2 &= 100002400034400240001 + 100042004430004200001 := 200044404464404440002 \\
10000030001^2 + 10003000001^2 &= 100000600020900060001 + 100060009020006000001 := 200060609040906060002
\end{aligned}$$

$$\begin{aligned}
10000130001^2 + 10003100001^2 &= 100002600036900260001 + 100062009630006200001 := 200064609666906460002 \\
10000001001^2 + 10010000001^2 &= 100000020020001002001 + 100200100020020000001 := 200200120040021002002 \\
10000101001^2 + 10010100001^2 &= 100002020030201202001 + 100202102030020200001 := 200204122060221402002 \\
10001001001^2 + 10010010001^2 &= 100020021022003002001 + 100200300220120020001 := 200220321242123022002 \\
10000011001^2 + 10011000001^2 &= 100000220020121022001 + 100220121020022000001 := 200220341040143022002 \\
10001101001^2 + 10010110001^2 &= 100022021232203202001 + 100202302232120220001 := 200224323464323422002 \\
10000111001^2 + 10011100001^2 &= 100002220032321222001 + 100222123230022200001 := 200224343262343422002 \\
10002001001^2 + 10010020001^2 &= 100040024024005002001 + 100200500420420040001 := 200240524444425042002 \\
10001011001^2 + 10011010001^2 &= 100020221042123022001 + 100220321240122020001 := 200240542282245042002 \\
10000021001^2 + 10012000001^2 &= 100000420020441042001 + 100240144020024000001 := 200240564040465042002 \\
10002101001^2 + 10010120001^2 &= 100042024434205202001 + 100202502434420240001 := 200244526868625442002 \\
10000121001^2 + 10012100001^2 &= 100002420034641242001 + 100242146430024200001 := 200244566464665442002 \\
10003001001^2 + 10010030001^2 &= 100060029026007002001 + 100200700620920060001 := 200260729646927062002 \\
10000031001^2 + 10013000001^2 &= 100000620020961062001 + 100260169020026000001 := 200260789040987062002 \\
10010001001^2 + 10010001001^2 &= 100200120040021002001 + 100200120040021002001 := 200400240080042004002 \\
10000002001^2 + 10020000001^2 &= 100000040020004004001 + 100400400020040000001 := 200400440040044004002 \\
10000102001^2 + 10020100001^2 &= 100002040030404204001 + 100402404030040200001 := 200404444060444404002 \\
10010011001^2 + 10011001001^2 &= 100200320240141022001 + 100220141042023002001 := 200420461282164024002 \\
10001002001^2 + 10020010001^2 &= 100020041024006004001 + 100400600420140020001 := 200420641444146024002 \\
10000012001^2 + 10021000001^2 &= 100000240020144024001 + 100420441020042000001 := 200420681040186024002 \\
10001102001^2 + 10020110001^2 &= 100022041234406204001 + 100402604432140220001 := 200424645666546424002 \\
10000112001^2 + 10021100001^2 &= 100002240032544224001 + 100422445230042200001 := 200424685262586424002 \\
10010021001^2 + 10012001001^2 &= 100200520440461042001 + 100240164044025002001 := 200440684484486044002 \\
10002002001^2 + 10020020001^2 &= 100040044028008004001 + 100400800820440040001 := 200440844848448044002 \\
10001012001^2 + 10021010001^2 &= 100020241044146024001 + 100420641440142020001 := 200440882484288044002 \\
10000003001^2 + 10030000001^2 &= 100000060020009006001 + 100600900020060000001 := 200600960040069006002 \\
10000103001^2 + 10030100001^2 &= 100002060030609206001 + 100602906030060200001 := 200604966060669406002 \\
10000000101^2 + 10100000001^2 &= 100000002020000010201 + 102010000020200000001 := 202010002040200010202 \\
10000100101^2 + 10100100001^2 &= 100002002030020210201 + 102012020030200200001 := 202014022060220410202 \\
10001000101^2 + 10100010001^2 &= 100020003020202010201 + 102010202020300020001 := 202030205040502030202 \\
10000010101^2 + 10101000001^2 &= 100000202020102030201 + 102030201020202000001 := 202030403040304030202 \\
10001100101^2 + 10100110001^2 &= 100022003230222210201 + 102012222032300220001 := 202034225262522430202 \\
10000110101^2 + 10101100001^2 &= 100002202032122230201 + 102032221230202200001 := 202034423262324430202 \\
10001010101^2 + 10101010001^2 &= 100020203040304030201 + 102030403040302020001 := 202050606080606050202 \\
10000020101^2 + 10102000001^2 &= 100000402020404050201 + 102050404020204000001 := 202050806040608050202 \\
10000120101^2 + 10102100001^2 &= 100002402034424250201 + 102052424430204200001 := 202054826464628450202 \\
10010000101^2 + 10100001001^2 &= 100200102022020010201 + 102010020220201002001 := 202210122242221012202 \\
10000001101^2 + 10110000001^2 &= 100000022020001212201 + 102212100020220000001 := 202212122040221212202
\end{aligned}$$

$$\begin{aligned}
&10010100101^2 + 10100101001^2 = 100202104032040210201 + 102012040230401202001 := 202214144262441412202 \\
&10000101101^2 + 10110100001^2 = 100002022030221412201 + 102214122030220200001 := 202216144060441612202 \\
&10011000101^2 + 10100011001^2 = 100220123022222010201 + 102010222220321022001 := 202230345242543032202 \\
&10010010101^2 + 10101001001^2 = 100200302222122030201 + 102030221222203002001 := 202230523444325032202 \\
&10001001101^2 + 10110010001^2 = 100020023022203212201 + 102212302220320020001 := 202232325242523232202 \\
&10000011101^2 + 10111000001^2 = 100000222020123232201 + 102232321020222000001 := 202232543040345232202 \\
&10011100101^2 + 10100111001^2 = 100222125232242210201 + 102012242232521222001 := 202234367464763432202 \\
&10010110101^2 + 10101101001^2 = 100202304234142230201 + 102032241432403202001 := 202234545666545432202 \\
&10001101101^2 + 10110110001^2 = 100022023232423412201 + 102214324232320220001 := 202236347464743632202 \\
&10000111101^2 + 10111100001^2 = 100002222032343432201 + 102234343230222200001 := 202236565262565632202 \\
&10011010101^2 + 10101011001^2 = 100220323242324030201 + 102030423242323022001 := 202250746484647052202 \\
&10010020101^2 + 10102001001^2 = 100200502422424050201 + 102050424224205002001 := 202250926646629052202 \\
&10001011101^2 + 10111010001^2 = 100020223042325232201 + 102232523240322020001 := 202252746282647252202 \\
&10000021101^2 + 10112000001^2 = 100000422020445252201 + 102252544020224000001 := 202252966040669252202 \\
&10000121101^2 + 10112100001^2 = 100002422034665452201 + 102254566430224200001 := 202256988464889652202 \\
&10020000101^2 + 10100002001^2 = 100400402024040010201 + 102010040420204004001 := 202410442444244014202 \\
&10010001101^2 + 10110001001^2 = 100200122042021212201 + 102212120240221002001 := 202412242282242214202 \\
&10000002101^2 + 10120000001^2 = 100000042020004414201 + 102414400020240000001 := 202414442040244414202 \\
&10020100101^2 + 10100102001^2 = 100402406034060210201 + 102012060430604204001 := 202414466464664414202 \\
&10000102101^2 + 10120100001^2 = 100002042030424614201 + 102416424030240200001 := 202418466060664814202 \\
&10021000101^2 + 10100012001^2 = 100420443024242010201 + 102010242420344024001 := 202430685444586034202 \\
&10020010101^2 + 10101002001^2 = 100400602424142030201 + 102030241424206004001 := 202430843848348034202 \\
&10011001101^2 + 10110011001^2 = 100220143044223212201 + 102212322440341022001 := 202432465484564234202 \\
&10010011101^2 + 10111001001^2 = 100200322242143232201 + 102232341242223002001 := 202432663484366234202 \\
&10001002101^2 + 10120010001^2 = 100020043024206414201 + 102414602420340020001 := 202434645444546434202 \\
&10000012101^2 + 10121000001^2 = 100000242020146434201 + 102434641020242000001 := 202434883040388434202 \\
&10001102101^2 + 10120110001^2 = 100022043234626614201 + 102416626432340220001 := 202438669666966834202 \\
&10030000101^2 + 10100003001^2 = 100600902026060010201 + 102010060620209006001 := 202610962646269016202 \\
&10030100101^2 + 10100103001^2 = 100602908036080210201 + 102012080630809206001 := 202614988666889416202 \\
&10000003101^2 + 10130000001^2 = 100000062020009616201 + 102616900020260000001 := 202616962040269616202 \\
&10100000101^2 + 10100000101^2 = 102010002040200010201 + 102010002040200010201 := 204020004080400020402 \\
&10000000201^2 + 10200000001^2 = 100000004020000040401 + 104040000020400000001 := 204040004040400040402 \\
&10100010101^2 + 10101000101^2 = 102010204040302030201 + 102030203040402010201 := 204040407080704040402 \\
&10000100201^2 + 10200100001^2 = 100002004030040240401 + 104042040030400200001 := 204044044060440440402 \\
&10001000201^2 + 10200010001^2 = 100020005020402040401 + 104040204020500020001 := 204060209040902060402 \\
&10000010201^2 + 10201000001^2 = 100000204020104060401 + 104060401020402000001 := 204060605040506060402 \\
&10001100201^2 + 10200110001^2 = 100022005230442240401 + 104042244032500220001 := 204064249262942460402 \\
&10000110201^2 + 10201100001^2 = 100002204032144260401 + 104062441230402200001 := 204064645262546460402
\end{aligned}$$

$$\begin{aligned}
&10100001101^2 + 10110000101^2 = 102010022240201212201 + 102212102042220010201 := 204222124282421222402 \\
&10010000201^2 + 10200001001^2 = 100200104024020040401 + 104040020420401002001 := 204240124444421042402 \\
&10101001101^2 + 10110010101^2 = 102030223242403212201 + 102212304242322030201 := 204242527484725242402 \\
&10100011101^2 + 10111000101^2 = 102010224240323232201 + 102232323042422010201 := 204242547282745242402 \\
&10000001201^2 + 10210000001^2 = 100000024020001442401 + 104244100020420000001 := 204244124040421442402 \\
&10010100201^2 + 10200101001^2 = 100202106034060240401 + 104042060430601202001 := 204244166464661442402 \\
&10000101201^2 + 10210100001^2 = 100002024030241642401 + 104246142030420200001 := 204248166060661842402 \\
&10011000201^2 + 10200011001^2 = 100220125024422040401 + 104040224420521022001 := 204260349444943062402 \\
&10010010201^2 + 10201001001^2 = 100200304224124060401 + 104060421422403002001 := 204260725646527062402 \\
&10001001201^2 + 10210010001^2 = 100020025022403442401 + 104244304220520020001 := 204264329242923462402 \\
&10000011201^2 + 10211000001^2 = 100000224020125462401 + 104264521020422000001 := 204264745040547462402 \\
&10010110201^2 + 10201101001^2 = 100202306236164260401 + 104062461632603202001 := 204264767868767462402 \\
&10000111201^2 + 10211100001^2 = 100002224032365662401 + 104266563230422200001 := 204268787262787862402 \\
&10100002101^2 + 10120000101^2 = 102010042440204414201 + 102414402044240010201 := 204424444484444424402 \\
&10020000201^2 + 10200002001^2 = 100400404028040040401 + 104040040820404004001 := 204440444848444044402 \\
&10010001201^2 + 10210001001^2 = 100200124044021442401 + 104244120440421002001 := 204444244484442444402 \\
&10020100201^2 + 10200102001^2 = 100402408038080240401 + 104042080830804204001 := 204444488868884444402 \\
&10101002101^2 + 10120010101^2 = 102030243444406414201 + 102414604444342030201 := 204444847888748444402 \\
&10100012101^2 + 10121000101^2 = 102010244440346434201 + 102434643044442010201 := 204444887484788444402 \\
&10000002201^2 + 10220000001^2 = 100000044020004844401 + 104448400020440000001 := 204448444040444844402 \\
&10021000201^2 + 10200012001^2 = 100420445028442040401 + 104040244820544024001 := 204460689848986064402 \\
&10011001201^2 + 10210011001^2 = 100220145046423442401 + 104244324640541022001 := 204464469686964464402 \\
&10010011201^2 + 10211001001^2 = 100200324244145462401 + 104264541442423002001 := 204464865686568464402 \\
&10001002201^2 + 10220010001^2 = 100020045024406844401 + 104448604420540020001 := 204468649444946864402 \\
&10100003101^2 + 10130000101^2 = 102010062640209616201 + 102616902046260010201 := 204626964686469626402 \\
&10000000301^2 + 10300000001^2 = 100000006020000090601 + 106090000020600000001 := 206090006040600090602 \\
&10000100301^2 + 10300100001^2 = 100002006030060290601 + 106092060030600200001 := 206094066060660490602 \\
&10010000301^2 + 10300001001^2 = 100200106026020090601 + 106090020620601002001 := 206290126646621092602 \\
&10010100301^2 + 10300101001^2 = 100202108036080290601 + 106092080630801202001 := 206294188666881492602 \\
&10000001301^2 + 10310000001^2 = 100000026020001692601 + 106296100020620000001 := 206296126040621692602 \\
&10010001301^2 + 10310001001^2 = 100200126046021692601 + 106296120640621002001 := 206496246686642694602 \\
&10000000011^2 + 11000000001^2 = 100000000220000000121 + 121000000022000000001 := 221000000242000000122 \\
&10000100011^2 + 11000100001^2 = 100002000230002200121 + 121002200032000200001 := 221004200262002400122 \\
&10001000011^2 + 11000010001^2 = 100020001220022000121 + 121000220022100020001 := 221020221242122020122 \\
&10000010011^2 + 11001000001^2 = 100000200220100220121 + 121022001022002000001 := 221022201242102220122 \\
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&10000110011^2 + 11001100001^2 = 100002200232102420121 + 121024201232002200001 := 221026401464104620122 \\
&10002000011^2 + 11000020001^2 = 100040004220044000121 + 121000440022400040001 := 221040444242444040122
\end{aligned}$$

$$\begin{aligned}
&10001010011^2 + 11001010001^2 = 100020201240122220121 + 121022221042102020001 := 221042422282224240122 \\
&10000020011^2 + 11002000001^2 = 100000400220400440121 + 121044004022004000001 := 221044404242404440122 \\
&10002100011^2 + 11000120001^2 = 100042004630046200121 + 121002640036400240001 := 221044644666446440122 \\
&10000120011^2 + 11002100001^2 = 100002400234402640121 + 121046204432004200001 := 221048604666406840122 \\
&10003000011^2 + 11000030001^2 = 100060009220066000121 + 121000660022900060001 := 221060669242966060122 \\
&10003100011^2 + 11000130001^2 = 100062009830068200121 + 121002860038900260001 := 221064869868968460122 \\
&10000030011^2 + 11003000001^2 = 100000600220900660121 + 121066009022006000001 := 221066609242906660122 \\
&10010000011^2 + 11000001001^2 = 100200100220220000121 + 121000022022001002001 := 221200122242221002122 \\
&10010100011^2 + 11000101001^2 = 100202102230222200121 + 121002222032201202001 := 221204324262423402122 \\
&10000001011^2 + 11010000001^2 = 100000020220001022121 + 121220100022020000001 := 221220120242021022122 \\
&10011000011^2 + 11000011001^2 = 100220121220242000121 + 121000242022121022001 := 221220363242363022122 \\
&10010010011^2 + 11001001001^2 = 100200300420320220121 + 121022023024003002001 := 221222323444323222122 \\
&10000101011^2 + 11010100001^2 = 100002020230203222121 + 121222302032020200001 := 221224322262223422122 \\
&10011100011^2 + 11000111001^2 = 100222123430244200121 + 121002442034321222001 := 221224565464565422122 \\
&10010110011^2 + 11001101001^2 = 100202302432322420121 + 121024223234203202001 := 221226525666525622122 \\
&10001001011^2 + 11010010001^2 = 100020021222023022121 + 121220320222120020001 := 221240341444143042122 \\
&10000011011^2 + 11011000001^2 = 100000220220121242121 + 121242121022022000001 := 221242341242143242122 \\
&10011010011^2 + 11001011001^2 = 100220321440342220121 + 121022243044123022001 := 221242564484465242122 \\
&10010020011^2 + 11002001001^2 = 100200500620620440121 + 121044026026005002001 := 221244526646625442122 \\
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&10001011011^2 + 11011010001^2 = 100020221242143242121 + 121242341242122020001 := 221262562484265262122 \\
&10000021011^2 + 11012000001^2 = 100000420220441462121 + 121264144022024000001 := 221264564242465462122 \\
&10000121011^2 + 11012100001^2 = 100002420234643662121 + 121266346432024200001 := 22126876666667862122 \\
&10003001011^2 + 11010030001^2 = 100060029226067022121 + 121220760622920060001 := 221280789848987082122 \\
&10000031011^2 + 11013000001^2 = 100000620220961682121 + 121286169022026000001 := 221286789242987682122 \\
&10020000011^2 + 11000002001^2 = 100400400220440000121 + 121000044022004004001 := 221400444242444004122 \\
&10020100011^2 + 11000102001^2 = 100402404230442200121 + 121002244032404204001 := 221404648262846404122 \\
&10010001011^2 + 11010001001^2 = 100200120240221022121 + 121220122042021002001 := 221420242282242024122 \\
&10020010011^2 + 11001002001^2 = 100400600620540220121 + 121022045026006004001 := 221422645646546224122 \\
&10020110011^2 + 11001102001^2 = 100402604632542420121 + 121024245236406204001 := 221426849868948624122 \\
&10000002011^2 + 11020000001^2 = 100000040220004044121 + 121440400022040000001 := 221440440242044044122 \\
&10011001011^2 + 11010011001^2 = 100220141242243022121 + 121220342242141022001 := 221440483484384044122 \\
&10010011011^2 + 11011001001^2 = 100200320440341242121 + 121242143044023002001 := 221442463484364244122 \\
&10000102011^2 + 11020100001^2 = 100002040230406244121 + 121442604032040200001 := 221444644262446444122 \\
&10001002011^2 + 11020010001^2 = 100020041224026044121 + 121440620422140020001 := 221460661646166064122 \\
&10000012011^2 + 11021000001^2 = 100000240220144264121 + 121462441022042000001 := 221462681242186264122
\end{aligned}$$



$$\begin{aligned}
&10010021011^2 + 11012001001^2 = 100200520640661462121 + 121264166046025002001 := 221464686686686464122 \\
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&10000112011^2 + 11021100001^2 = 100002240232546464121 + 121464645232042200001 := 221466885464588664122 \\
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&10000003011^2 + 11030000001^2 = 100000060220009066121 + 121660900022060000001 := 221660960242069066122 \\
&10100000011^2 + 11000000101^2 = 102010000222200000121 + 121000002222000010201 := 223010002444200010322 \\
&10100100011^2 + 11000100101^2 = 102012020232202200121 + 121002202232020210201 := 223014222464222410322 \\
&10101000011^2 + 11000010101^2 = 10203020122222000121 + 12100022222102030201 := 223030423444324030322 \\
&10100010011^2 + 11001000101^2 = 102010202222300220121 + 121022003222202010201 := 223032205444502230322 \\
&10101100011^2 + 11000110101^2 = 102032221432224200121 + 121002422234122230201 := 223034643666346430322 \\
&10100110011^2 + 11001100101^2 = 102012222234302420121 + 121024203432222210201 := 223036425666524630322 \\
&10102000011^2 + 11000020101^2 = 102050404222244000121 + 121000442222404050201 := 223050846444648050322 \\
&10101010011^2 + 11001010101^2 = 102030403242322220121 + 121022223242304030201 := 223052626484626250322 \\
&10000000111^2 + 11100000001^2 = 100000002220000012321 + 123210000022200000001 := 223210002242200012322 \\
&10110000011^2 + 11000001101^2 = 102212100222420000121 + 121000024222001212201 := 223212124444421212322 \\
&10000100111^2 + 11100100001^2 = 100002002230022212321 + 123212220032200200001 := 223214222262222412322 \\
&10110100011^2 + 11000101101^2 = 102214122232422200121 + 121002224232221412201 := 223216346464643612322 \\
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&10010000111^2 + 11100001001^2 = 100200102222220012321 + 123210022222201002001 := 223410124444421014322 \\
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&10011000111^2 + 11100011001^2 = 100220123222442012321 + 123210244222321022001 := 223430367444763034322
\end{aligned}$$

$$\begin{aligned}
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&10000003111^2 + 11130000001^2 = 100000062220009678321 + 123876900022260000001 := 223876962242269678322 \\
&10200000011^2 + 11000000201^2 = 104040000224400000121 + 121000004422000040401 := 225040004646400040522 \\
&10200100011^2 + 11000100201^2 = 104042040234402200121 + 121002204432040240401 := 225044244666442440522 \\
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\end{aligned}$$

$$\begin{aligned}
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10100010111^2 + 11101000101^2 &= 102010204242302232321 + 123232203242402010201 := 225242407484704242522 \\
10210000011^2 + 11000001201^2 &= 104244100224620000121 + 121000026422001442401 := 225244126646621442522 \\
10210100011^2 + 11000101201^2 &= 104246142234622200121 + 121002226432241642401 := 225248368666863842522 \\
10211000011^2 + 11000011201^2 &= 104264521224642000121 + 121000246422125462401 := 225264767646767462522 \\
10110000111^2 + 11100001101^2 &= 102212102244420012321 + 123210024442201212201 := 225422126686621224522 \\
10000000211^2 + 11200000001^2 &= 100000004220000044521 + 125440000022400000001 := 225440004242400044522 \\
10100001111^2 + 11110000101^2 &= 102010022442201234321 + 123432102244220010201 := 225442124686421244522 \\
10111000111^2 + 11100011101^2 &= 102232323244642012321 + 123210246442323232201 := 225442569686965244522 \\
10000100211^2 + 11200100001^2 &= 100002004230042244521 + 125442240032400200001 := 225444244262442444522 \\
10110010111^2 + 11101001101^2 &= 102212304444522232321 + 123232225444403212201 := 225444529888925444522 \\
10220000011^2 + 11000002201^2 &= 104448400224840000121 + 121000048422004844401 := 225448448646844844522 \\
10001000211^2 + 11200010001^2 &= 100020005220422044521 + 125440224022500020001 := 225460229242922064522 \\
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10100002111^2 + 11120000101^2 &= 102010042642204456321 + 123654402246240010201 := 225664444888444466522 \\
10000101211^2 + 11210100001^2 &= 100002024230243666521 + 125666342032420200001 := 225668366262663866522 \\
10001001211^2 + 11210010001^2 &= 100020025222423466521 + 125664324222520020001 := 225684349444943486522 \\
10000011211^2 + 11211000001^2 &= 100000224220125686521 + 125686521022422000001 := 225686745242547686522 \\
10100012111^2 + 11121000101^2 &= 102010244642346676321 + 123676643246442010201 := 225686887888788686522 \\
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10000100311^2 + 11300100001^2 &= 100002006230062296721 + 127692260032600200001 := 227694266262662496722 \\
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\end{aligned}$$

$$\begin{aligned}
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11000020011^2 + 11002000011^2 &= 121000440242400440121 + 121044004242044000121 := 242044444484444440242 \\
11000030011^2 + 11003000011^2 &= 121000660242900660121 + 121066009242066000121 := 242066669484966660242 \\
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11000011011^2 + 11011000011^2 &= 121000242242121242121 + 121242121242242000121 := 242242363484363242242 \\
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11000002011^2 + 11020000011^2 &= 121000044242004044121 + 121440400242440000121 := 2424404444844444044242 \\
11001002011^2 + 11020010011^2 &= 121022045246026044121 + 121440620642540220121 := 242462665888566264242 \\
11000003011^2 + 11030000011^2 &= 121000066242009066121 + 121660900242660000121 := 242660966484669066242 \\
10000000021^2 + 12000000001^2 &= 100000000420000000441 + 144000000024000000001 := 244000000444000000442 \\
10000100021^2 + 12000100001^2 &= 100002000430004200441 + 144002400034000200001 := 244004400464004400442 \\
10001000021^2 + 12000010001^2 &= 100020001420042000441 + 144000240024100020001 := 244020241444142020442 \\
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10002000021^2 + 12000020001^2 &= 100040004420084000441 + 144000480024400040001 := 244040484444484040442 \\
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10002100021^2 + 12000120001^2 &= 100042004830088200441 + 144002880038400240001 := 244044884868488440442 \\
10000020021^2 + 12002000001^2 &= 100000400420400840441 + 144048004024004000001 := 244048404444404840442 \\
10010000021^2 + 12000001001^2 &= 100200100420420000441 + 144000024024001002001 := 244200124444421002442 \\
10010100021^2 + 12000101001^2 &= 100202102430424200441 + 144002424034201202001 := 244204526464625402442 \\
11000000111^2 + 11100000011^2 &= 121000002442000012321 + 123210000244200000121 := 244210002686200012442 \\
10011000021^2 + 12000011001^2 &= 100220121420462000441 + 144000264024121022001 := 244220385444583022442 \\
10010010021^2 + 12001001001^2 &= 100200300620520420441 + 144024025026003002001 := 244224325646523422442 \\
10011100021^2 + 12000111001^2 &= 100222123630466200441 + 144002664036321222001 := 244224787666787422442 \\
10010110021^2 + 12001101001^2 &= 100202302632524620441 + 144026425236203202001 := 244228727868727822442 \\
11001000111^2 + 11100010011^2 &= 121022003442222012321 + 123210222244300220121 := 244232225686522232442 \\
11000010111^2 + 11101000011^2 &= 121000222442102232321 + 123232201244222000121 := 244232423686324232442 \\
10000001021^2 + 12010000001^2 &= 100000020420001042441 + 144240100024020000001 := 244240120444021042442 \\
10000101021^2 + 12010100001^2 &= 100002020430205242441 + 144242502034020200001 := 244244522464225442442 \\
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10010020021^2 + 12002001001^2 &= 100200500820820840441 + 144048028028005002001 := 244248528848825842442 \\
11000020111^2 + 11102000011^2 &= 121000442442404452321 + 123254404244244000121 := 244254846686648452442 \\
10001001021^2 + 12010010001^2 &= 100020021422043042441 + 144240340224120020001 := 244260361646163062442 \\
10000011021^2 + 12011000001^2 &= 100000220420121462441 + 144264121024022000001 := 244264341444143462442 \\
10001101021^2 + 12010110001^2 &= 100022021632247242441 + 144242742236120220001 := 244264763868367462442
\end{aligned}$$

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10000021021^2 + 12012000001^2 &= 100000420420441882441 + 144288144024024000001 := 244288564444465882442 \\
10020000021^2 + 12000002001^2 &= 100400400420840000441 + 144000048024004004001 := 244400448444844004442 \\
10020010021^2 + 12001002001^2 &= 100400600820940420441 + 144024049028006004001 := 244424649848946424442 \\
11010000111^2 + 11100001011^2 &= 121220102444220012321 + 123210022444201022121 := 244430124888421034442 \\
11000001111^2 + 11110000011^2 &= 121000024442001234321 + 123432100244420000121 := 244432124686421234442 \\
10010001021^2 + 12010001001^2 &= 100200120440421042441 + 144240124044021002001 := 244440244484442044442 \\
11011000111^2 + 11100011011^2 &= 121242123444442012321 + 123210244444321242121 := 244452367888763254442 \\
11001001111^2 + 11110010011^2 &= 121022025444223234321 + 123432322444520220121 := 244454347888743454442 \\
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10010021021^2 + 12012001001^2 &= 100200520840861882441 + 144288168048025002001 := 244488688888886884442 \\
11000002111^2 + 11120000011^2 &= 121000046442004456321 + 123654400244640000121 := 244654446686644456442 \\
11000003111^2 + 11130000011^2 &= 121000068442009678321 + 123876900244860000121 := 244876968686869678442 \\
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10100010021^2 + 12001000101^2 &= 102010202424300420441 + 144024003424202010201 := 246034205848502430642 \\
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10101010021^2 + 12001010101^2 &= 102030403444342420441 + 144024243444304030201 := 246054646888646450642 \\
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\end{aligned}$$



$$\begin{aligned}
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10000000002^2 + 20000000001^2 &= 100000000040000000004 + 400000000040000000001 := 500000000080000000005 \\
10001000002^2 + 20000010001^2 &= 100020001040004000004 + 400000400040100020001 := 500020401080104020005 \\
10000010002^2 + 20001000001^2 &= 100000200040100040004 + 400040001040002000001 := 500040201080102040005 \\
10002000002^2 + 20000020001^2 &= 100040004040008000004 + 400000800040400040001 := 500040804080408040005 \\
10000020002^2 + 20002000001^2 &= 100000400040400080004 + 400080004040004000001 := 500080404080404080005 \\
10010000002^2 + 20000001001^2 &= 100200100040040000004 + 400000040040001002001 := 500200140080041002005 \\
10011000002^2 + 20000011001^2 &= 100220121040044000004 + 400000440040121022001 := 500220561080165022005 \\
10010010002^2 + 20001001001^2 &= 100200300240140040004 + 400040041042003002001 := 500240341282143042005 \\
10012000002^2 + 20000021001^2 &= 100240144040048000004 + 400000840040441042001 := 500240984080489042005 \\
10010020002^2 + 20002001001^2 &= 100200500440440080004 + 400080044044005002001 := 500280544484445082005 \\
10000001002^2 + 20010000001^2 &= 100000020040001004004 + 400400100040020000001 := 500400120080021004005 \\
10020000002^2 + 20000002001^2 &= 100400400040080000004 + 400000080040004004001 := 500400480080084004005 \\
10001001002^2 + 20010010001^2 &= 100020021042005004004 + 400400500240120020001 := 500420521282125024005 \\
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10020010002^2 + 20001002001^2 &= 100400600440180040004 + 400040081044006004001 := 500440681484186044005 \\
10002001002^2 + 20010020001^2 &= 100040024044009004004 + 400400900440420040001 := 500440924484429044005 \\
10000021002^2 + 20012000001^2 &= 100000420040441084004 + 400480144040024000001 := 500480564080465084005 \\
10020020002^2 + 20002002001^2 &= 100400800840480080004 + 400080084048008004001 := 500480884888488084005 \\
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10001002002^2 + 20020010001^2 &= 100020041044008008004 + 400800800440140020001 := 500820841484148028005 \\
10000012002^2 + 20021000001^2 &= 100000240040144048004 + 400840441040042000001 := 500840681080186048005 \\
10100000002^2 + 20000000101^2 &= 102010000040400000004 + 400000004040000010201 := 502010004080400010205 \\
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10100010002^2 + 20001000101^2 &= 102010202040500040004 + 400040005040202010201 := 502050207080702050205 \\
10110000002^2 + 20000001101^2 &= 102212100040440000004 + 400000044040001212201 := 502212144080441212205 \\
10111000002^2 + 20000011101^2 &= 102232321040444000004 + 400000444040123232201 := 502232765080567232205 \\
10110010002^2 + 20001001101^2 &= 102212302240540040004 + 400040045042203212201 := 502252347282743252205 \\
10100001002^2 + 20010000101^2 &= 102010020240401004004 + 400400104042020010201 := 502410124282421014205 \\
10120000002^2 + 20000002101^2 &= 102414400040480000004 + 400000084040004414201 := 502414484080484414205 \\
10101001002^2 + 20010010101^2 &= 102030221242405004004 + 400400504242122030201 := 502430725484527034205 \\
10100011002^2 + 20011000101^2 &= 102010222240521044004 + 400440125042222010201 := 502450347282743054205 \\
10120010002^2 + 20001002101^2 &= 102414602440580040004 + 400040085044206414201 := 502454687484786454205 \\
10100002002^2 + 20020000101^2 &= 102010040440404008004 + 400800404044040010201 := 502810444484444018205 \\
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10000000102^2 + 20100000001^2 &= 100000002040000010404 + 404010000040200000001 := 504010002080200010405 \\
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\end{aligned}$$

$$\begin{aligned}
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10000000202^2 + 20200000001^2 &= 100000004040000040804 + 408040000040400000001 := 508040004080400040805 \\
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10000001202^2 + 20210000001^2 &= 100000024040001444804 + 408444100040420000001 := 508444124080421444805 \\
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11000000002^2 + 20000000011^2 &= 121000000044000000004 + 400000000440000000121 := 521000000484000000125 \\
11001000002^2 + 20000010011^2 &= 121022001044004000004 + 400000400440100220121 := 521022401484104220125 \\
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\end{aligned}$$

$$\begin{aligned}
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11100011002^2 + 20011000111^2 &= 123210244244521044004 + 400440125442442012321 := 523650369686963056325 \\
11120000002^2 + 20000002111^2 &= 123654400044480000004 + 400000084440004456321 := 523654484484484456325 \\
11000000102^2 + 20100000011^2 &= 121000002244000010404 + 404010000442200000121 := 525010002686200010525 \\
11001000102^2 + 20100010011^2 &= 121022003244204010404 + 404010402442300220121 := 525032405686504230525 \\
11000010102^2 + 20101000011^2 &= 121000222244102050404 + 404050201442222000121 := 525050423686324050525 \\
11000020102^2 + 20102000011^2 &= 121000442244404090404 + 404090404442244000121 := 525090846686648090525 \\
11010000102^2 + 20100001011^2 &= 121220102246040010404 + 404010040642201022121 := 525230142888241032525 \\
11011000102^2 + 20100011011^2 &= 121242123246244010404 + 404010442642321242121 := 525252565888565252525 \\
11000001102^2 + 20110000011^2 &= 121000024244001214404 + 404412100442420000121 := 525412124686421214525 \\
11001001102^2 + 20110010011^2 &= 121022025246205214404 + 404412502642520220121 := 525434527888725434525 \\
11200000002^2 + 20000000211^2 &= 125440000044800000004 + 400000008440000044521 := 525440008484800044525 \\
11000011102^2 + 20111000011^2 &= 121000244244123254404 + 404452321442442000121 := 525452565686565254525 \\
11201000002^2 + 20000010211^2 &= 125462401044804000004 + 400000408440104264521 := 525462809484908264525 \\
11210000002^2 + 20000001211^2 &= 125664100044840000004 + 400000048440001466521 := 525664148484841466525 \\
11211000002^2 + 20000011211^2 &= 125686521044844000004 + 400000448440125686521 := 525686969484969686525 \\
11000002102^2 + 20120000011^2 &= 121000046244004418404 + 404814400442640000121 := 525814446686644418525 \\
11220000002^2 + 20000002211^2 &= 125888400044880000004 + 400000088440004888521 := 525888488484884888525 \\
11000000202^2 + 20200000011^2 &= 121000004444000040804 + 408040000444400000121 := 529040004888400040925
\end{aligned}$$

$$\begin{aligned}
11001000202^2 + 20200010011^2 &= 1210220054444040804 + 408040404444500220121 := 529062409888904260925 \\
11000010202^2 + 20201000011^2 &= 121000224444104080804 + 408080401444422000121 := 529080625888526080925 \\
11000001202^2 + 20210000011^2 &= 121000026444001444804 + 408444100444620000121 := 529444126888621444925 \\
11000011202^2 + 20211000011^2 &= 121000246444125484804 + 408484521444642000121 := 529484767888767484925 \\
11000002202^2 + 20220000011^2 &= 121000048444004848804 + 408848400444840000121 := 529848448888844848925 \\
10000000012^2 + 21000000001^2 &= 100000000240000000144 + 441000000042000000001 := 541000000282000000145 \\
10001000012^2 + 21000010001^2 &= 100020001240024000144 + 441000420042100020001 := 541020421282124020145 \\
10002000012^2 + 21000020001^2 &= 100040004240048000144 + 441000840042400040001 := 541040844282448040145 \\
10000010012^2 + 21001000001^2 &= 100000200240100240144 + 441042001042002000001 := 541042201282102240145 \\
10000020012^2 + 21002000001^2 &= 100000400240400480144 + 441084004042004000001 := 541084404282404480145 \\
10010000012^2 + 21000001001^2 &= 100200100240240000144 + 441000042042001002001 := 541200142282241002145 \\
10011000012^2 + 21000011001^2 &= 100220121240264000144 + 441000462042121022001 := 541220583282385022145 \\
10010010012^2 + 21001001001^2 &= 100200300440340240144 + 441042043044003002001 := 541242343484343242145 \\
10010020012^2 + 21002001001^2 &= 100200500640640480144 + 441084046046005002001 := 541284546686645482145 \\
10020000012^2 + 21000002001^2 &= 100400400240480000144 + 441000084042004004001 := 541400484282484004145 \\
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10001001012^2 + 21010010001^2 &= 100020021242025024144 + 441420520242120020001 := 541440541484145044145 \\
10020010012^2 + 21001002001^2 &= 100400600640580240144 + 441042085046006004001 := 541442685686586244145 \\
10002001012^2 + 21010020001^2 &= 100040024244049024144 + 441420940442420040001 := 541460964686469064145 \\
10000011012^2 + 21011000001^2 &= 100000220240121264144 + 441462121042022000001 := 541462341282143264145 \\
10000002012^2 + 21020000001^2 &= 100000040240004048144 + 441840400042040000001 := 541840440282044048145 \\
10001002012^2 + 21020010001^2 &= 100020041244028048144 + 441840820442140020001 := 541860861686168068145 \\
10000012012^2 + 21021000001^2 &= 100000240240144288144 + 441882441042042000001 := 541882681282186288145 \\
10100000012^2 + 21000000101^2 &= 102010000242400000144 + 441000004242000010201 := 543010004484400010345 \\
10101000012^2 + 21000010101^2 &= 102030201242424000144 + 441000424242102030201 := 543030625484526030345 \\
10100010012^2 + 21001000101^2 &= 102010202242500240144 + 441042005242202010201 := 543052207484702250345 \\
10110000012^2 + 21000001101^2 &= 102212100242640000144 + 441000046242001212201 := 543212146484641212345 \\
10111000012^2 + 21000011101^2 &= 102232321242664000144 + 441000466242123232201 := 543232787484787232345 \\
10110010012^2 + 21001001101^2 &= 102212302442740240144 + 441042047244203212201 := 543254349686943452345 \\
10120000012^2 + 21000002101^2 &= 102414400242880000144 + 441000088242004414201 := 543414488484884414345 \\
10100001012^2 + 21010000101^2 &= 102010020442401024144 + 441420104244020010201 := 543430124686421034345 \\
10101001012^2 + 21010010101^2 &= 102030221444425024144 + 441420524444122030201 := 543450745888547054345 \\
10100011012^2 + 21011000101^2 &= 102010222442521264144 + 441462125244222010201 := 543472347686743274345 \\
10100002012^2 + 21020000101^2 &= 102010040642404048144 + 441840404246040010201 := 543850444888444058345 \\
10100012012^2 + 21021000101^2 &= 102010242642544288144 + 441882445246242010201 := 543892687888786298345 \\
12000000002^2 + 20000000021^2 &= 144000000048000000004 + 400000000840000000441 := 544000000888000000445 \\
12001000002^2 + 20000010021^2 &= 144024001048004000004 + 400000400840100420441 := 544024401888104420445 \\
12000010002^2 + 20001000021^2 &= 144000240048100040004 + 400040001840042000441 := 544040241888142040445
\end{aligned}$$

$$\begin{aligned}
12002000002^2 + 20000020021^2 &= 144048004048008000004 + 400000800840400840441 := 544048804888408840445 \\
12000020002^2 + 20002000021^2 &= 144000480048400080004 + 400080004840084000441 := 544080484888484080445 \\
12010000002^2 + 20000001021^2 &= 144240100048040000004 + 400000040840001042441 := 544240140888041042445 \\
12011000002^2 + 20000011021^2 &= 144264121048044000004 + 400000440840121462441 := 544264561888165462445 \\
12012000002^2 + 20000021021^2 &= 144288144048048000004 + 400000840840441882441 := 544288984888489882445 \\
12000001002^2 + 20010000021^2 &= 144000024048001004004 + 400400100840420000441 := 544400124888421004445 \\
12000011002^2 + 20011000021^2 &= 144000264048121044004 + 400440121840462000441 := 544440385888583044445 \\
12020000002^2 + 20000002021^2 &= 144480400048080000004 + 400000080840004084441 := 544480480888084084445 \\
12000002002^2 + 20020000021^2 &= 144000048048004008004 + 400800400840840000441 := 54480044888844008445 \\
10200000012^2 + 21000000201^2 &= 104040000244800000144 + 441000008442000040401 := 545040008686800040545 \\
10201000012^2 + 21000010201^2 &= 104060401244824000144 + 441000428442104060401 := 545060829686928060545 \\
10000000112^2 + 21100000001^2 &= 100000002240000012544 + 445210000042200000001 := 545210002282200012545 \\
10001000112^2 + 21100010001^2 &= 100020003240224012544 + 445210422042300020001 := 545230425282524032545 \\
10000010112^2 + 21101000001^2 &= 100000202240102252544 + 445252201042202000001 := 545252403282304252545 \\
10000020112^2 + 21102000001^2 &= 100000402240404492544 + 445294404042204000001 := 545294806282608492545 \\
10010000112^2 + 21100001001^2 &= 100200102242240012544 + 445210042242201002001 := 545410144484441014545 \\
10011000112^2 + 21100011001^2 &= 100220123242464012544 + 445210464242321022001 := 545430587484785034545 \\
10010010112^2 + 21101001001^2 &= 100200302442342252544 + 445252243244203002001 := 545452545686545254545 \\
10010020112^2 + 21102001001^2 &= 100200502642644492544 + 445294446246205002001 := 54549494888849494545 \\
10020000112^2 + 21100002001^2 &= 100400402244480012544 + 445210084442204004001 := 545610486686684016545 \\
10000001112^2 + 21110000001^2 &= 100000022240001236544 + 445632100042220000001 := 545632122282221236545 \\
10001001112^2 + 21110010001^2 &= 100020023242225236544 + 445632522242320020001 := 545652545484545256545 \\
10000011112^2 + 21111000001^2 &= 100000222240123476544 + 445674321042222000001 := 545674543282345476545 \\
12100000002^2 + 20000000121^2 &= 146410000048400000004 + 400000004840000014641 := 546410004888400014645 \\
12101000002^2 + 20000010121^2 &= 146434201048404000004 + 400000404840102434641 := 546434605888506434645 \\
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12110000002^2 + 20000001121^2 &= 146652100048440000004 + 400000044840001256641 := 546652144888441256645 \\
12111000002^2 + 20000011121^2 &= 146676321048444000004 + 400000444840123676641 := 546676765888567676645 \\
12120000002^2 + 20000002121^2 &= 146894400048480000004 + 400000084840004498641 := 546894484888484498645 \\
12200000002^2 + 20000000221^2 &= 148840000048800000004 + 400000008840000048841 := 548840008888800048845 \\
12201000002^2 + 20000010221^2 &= 148864401048804000004 + 400000408840104468841 := 548864809888908468845 \\
10000000212^2 + 21200000001^2 &= 100000004240000044944 + 449440000042400000001 := 549440004282400044945 \\
10001000212^2 + 21200010001^2 &= 100020005240424044944 + 449440424042500020001 := 549460429282924064945 \\
10000010212^2 + 21201000001^2 &= 100000204240104284944 + 449482401042402000001 := 549482605282506284945 \\
10010000212^2 + 21200001001^2 &= 100200104244240044944 + 449440042442401002001 := 549640146686641046945 \\
10010010212^2 + 21201001001^2 &= 100200304444344284944 + 449482443444403002001 := 549682747888747286945 \\
10000001212^2 + 21210000001^2 &= 100000024240001468944 + 449864100042420000001 := 549864124282421468945 \\
10001001212^2 + 21210010001^2 &= 100020025242425468944 + 449864524242520020001 := 549884549484945488945
\end{aligned}$$

$$\begin{aligned}
1000000022^2 + 2200000001^2 &= 10000000044000000484 + 48400000004400000001 := 584000000484000000485 \\
1000100022^2 + 22000010001^2 &= 100020001440044000484 + 484000440044100020001 := 584020441484144020485 \\
1000200022^2 + 22000020001^2 &= 100040004440088000484 + 484000880044400040001 := 584040884484488040485 \\
10000010022^2 + 22001000001^2 &= 100000200440100440484 + 484044001044002000001 := 584044201484102440485 \\
10000020022^2 + 22002000001^2 &= 100000400440400880484 + 484088004044004000001 := 584088404484404880485 \\
1001000022^2 + 22000001001^2 &= 100200100440440000484 + 484000044044001002001 := 584200144484441002485 \\
10010010022^2 + 22001001001^2 &= 100200300640540440484 + 484044045046003002001 := 584244345686543442485 \\
10010020022^2 + 22002001001^2 &= 100200500840840880484 + 484088048048005002001 := 584288548888845882485 \\
1002000022^2 + 22000002001^2 &= 100400400440880000484 + 484000088044004004001 := 584400488484884004485 \\
10000001022^2 + 22010000001^2 &= 100000020440001044484 + 484440100044020000001 := 584440120484021044485 \\
10020010022^2 + 22001002001^2 &= 100400600840980440484 + 484044089048006004001 := 584444689888986444485 \\
10001001022^2 + 22010010001^2 &= 100020021442045044484 + 484440540244120020001 := 584460561686165064485 \\
10000011022^2 + 22011000001^2 &= 100000220440121484484 + 484484121044022000001 := 584484341484143484485 \\
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1010000022^2 + 22000000101^2 &= 102010000444400000484 + 484000004444000010201 := 586010004888400010685 \\
1010100022^2 + 22000010101^2 &= 102030201444444000484 + 484000444444102030201 := 586030645888546030685 \\
10100010022^2 + 22001000101^2 &= 102010202444500440484 + 484044005444202010201 := 586054207888702450685 \\
1011000022^2 + 22000001101^2 &= 102212100444840000484 + 484000048444001212201 := 586212148888841212685 \\
10000000122^2 + 22100000001^2 &= 100000002440000014884 + 488410000044200000001 := 588410002484200014885 \\
10001000122^2 + 22100010001^2 &= 100020003440244014884 + 488410442044300020001 := 588430445484544034885 \\
10000010122^2 + 22101000001^2 &= 100000202440102454884 + 488454201044202000001 := 588454403484304454885 \\
10000020122^2 + 22102000001^2 &= 100000402440404894884 + 488498404044204000001 := 588498806484608894885 \\
10010000122^2 + 22100001001^2 &= 100200102442440014884 + 488410044244201002001 := 588610146686641016885 \\
10010010122^2 + 22101001001^2 &= 100200302642542454884 + 488454245246203002001 := 588654547888745456885 \\
10000001122^2 + 22110000001^2 &= 100000022440001258884 + 488852100044220000001 := 588852122484221258885 \\
10001001122^2 + 22110010001^2 &= 100020023442245258884 + 488852542244320020001 := 588872565686565278885 \\
10000011122^2 + 22111000001^2 &= 100000222440123698884 + 488896321044222000001 := 588896543484345698885
\end{aligned}$$

**Remark 2.1.** *Higher digits expressions shall be dealt elsewhere.*

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