# Different Types of Magic Rectangles in Construction of Magic Squares of Order 34 

# The work is also available at the following link: 

 https://shorturl.at/ckptRInder J. Taneja ${ }^{11}$


#### Abstract

This work brings magic squares of order 34. These are constructed based on different types of magic rectangles. These types are bordered, double digits and cornered magic rectangles. For more details on these types of magic rectangles refer author's work [86]. The construction of magic squares is based on four equal sums magic rectangles of orders $14 \times 20,12 \times 22,10 \times 24,8 \times 26,6 \times 28$ and $4 \times 30$. In case of cornered magic rectangles, three different types of magic squares are studies. Similar kind of work based on bordered magic rectangles or double digits magic squares can be seen in [67, 84]


[^0]
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## 1 Introduction

This work brings magic squares in very different way. These are based on cornered magic rectangles. First of let's understand what we mean by cornered magic rectangles. There are normal magic rectangles with some extra properties. For examples if remove external border still we left with lower order cornered magic rectangles. Here the external border is understood as one half. See below few examples:

## 2 Different Type Magic Rectangles

Magic rectangles are well known in the literature. Below is an example of a magic rectangle of order $12 \times 20$.

| 196 | 109 | 50 | 80 | 79 | 39 | 203 | 61 | 93 | 98 | 18 | 95 | 223 | 85 | 158 | 137 | 108 | 129 | 225 | 224 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 142 | 240 | 154 | 74 | 150 | 73 | 30 | 11 | 120 | 37 | 121 | 46 | 66 | 236 | 218 | 180 | 174 | 166 | 110 | 62 |
| 115 | 35 | 59 | 232 | 163 | 107 | 133 | 16 | 228 | 49 | 112 | 19 | 209 | 197 | 13 | 113 | 235 | 204 | 149 | 22 |
| 2410 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 54 | 24 | 135 | 185 | 117 | 220 | 141 | 145 | 6 | 201 | 202 | 186 | 156 | 51 | 194 | 81 | 119 | 53 | 106 | 34 |
| 184 | 92 | 168 | 9 | 237 | 29 | 153 | 226 | 207 | 94 | 229 | 1 | 56 | 26 | 7 | 175 | 123 | 84 | 199 | 111 |
| 12 | 2410 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | 43 | 128 | 136 | 5 | 173 | 138 | 216 | 105 | 78 | 214 | 160 | 144 | 99 | 44 | 114 | 89 | 116 | 231 | 165 |
| 205 | 212 | 47 | 41 | 146 | 210 | 227 | 86 | 14 | 151 | 71 | 155 | 36 | 181 | 195 | 20 | 126 | 72 | 76 | 139 |
| 100 | 187 | 217 | 208 | 147 | 177 | 67 | 127 | 27 | 183 | 104 | 77 | 60 | 233 | 191 | 45 | 125 | 42 | 2 | 91 |
| 100 | 2410 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 215 | 55 | 40 | 58 | 159 | 122 | 161 | 211 | 70 | 176 | 221 | 192 | 148 | 25 | 57 | 96 | 172 | 82 | 48 | 102 |
| 2410 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 200 | 206 | 189 | 3 | 198 | 131 | 4 | 33 | 239 | 101 | 21 | 222 | 32 | 178 | 38 | 152 | 65 | 193 | 75 | 130 |
| 8 | 140 | 171 | 238 | 17 | 31 | 179 | 124 | 170 | 188 | 69 | 63 | 97 | 83 | 213 | 164 | 23 | 143 | 157 | 132 |
| 15 | 2410 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 103 | 88 | 182 | 28 | 134 | 10 | 190 | 167 | 90 | 64 | 230 | 219 | 52 | 118 | 169 | 87 | 162 | 68 | 234 | 2410 |
| 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 | 1446 |

It is just a simple magic rectangle. Below there are three different types of magic rectangles:

1. Bordered Magic Rectangles;
2. Double Digits Magic Rectangles;
3. Cornered Magic Rectangles.

Later these types of magic rectangles are used to construct magic squares. The construction is based on four equal order and equal sums magic rectangles of each type. For details refer author's work [86, 87, 88, 89]. These are given in following subsections. The examples considered in this work are calculated using softwares by H. White [1].

### 2.1 Bordered Magic Rectangles

Bordered magic rectangles are very much similar to bordered magic squares. The difference is that in case bordered magic rectangles, the width and height are different, while in case of bordered magic squares the width and height are the same. Below are few examples of bordered magic rectangles.

Let's consider a bordered magic rectangle of order $12 \times 18$ formed by 216 sequential entries, i.e., from 1 to 216:

| 8 | 210 | 198 | 5 | 202 | 207 | 21 | 26 | 204 | 194 | 197 | 28 | 1 | 25 | 200 | 9 | 206 | 12 | 1953 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 201 | 44 | 184 | 35 | 50 | 185 | 30 | 180 | 51 | 172 | 175 | 41 | 177 | 39 | 170 | 165 | 38 | 16 | 1953 |
| 215 | 49 | 56 | 66 | 148 | 158 | 57 | 149 | 147 | 157 | 163 | 65 | 55 | 67 | 159 | 72 | 168 | 2 | 1953 |
| 22 | 169 | 61 | 88 | 81 | 73 | 141 | 132 | 83 | 131 | 82 | 143 | 78 | 133 | 137 | 156 | 48 | 195 | 1953 |
| 14 | 34 | 155 | 140 | 90 | 97 | 95 | 128 | 118 | 96 | 94 | 126 | 124 | 117 | 77 | 62 | 183 | 203 | 1953 |
| 4 | 181 | 63 | 130 | 119 | 109 | 105 | 116 | 106 | 103 | 115 | 104 | 110 | 98 | 87 | 154 | 36 | 213 | 1953 |
| 24 | 43 | 153 | 75 | 125 | 108 | 112 | 101 | 111 | 114 | 102 | 113 | 107 | 92 | 142 | 64 | 174 | 193 | 1953 |
| 190 | 186 | 164 | 138 | 100 | 120 | 122 | 89 | 99 | 121 | 123 | 91 | 93 | 127 | 79 | 53 | 31 | 27 | 1953 |
| 6 | 29 | 71 | 80 | 136 | 144 | 76 | 85 | 134 | 86 | 135 | 74 | 139 | 84 | 129 | 146 | 188 | 211 | 1953 |
| 199 | 171 | 145 | 151 | 69 | 59 | 160 | 68 | 70 | 60 | 54 | 152 | 162 | 150 | 58 | 161 | 46 | 18 | 1953 |
| 214 | 179 | 33 | 182 | 167 | 32 | 187 | 37 | 166 | 45 | 42 | 176 | 40 | 178 | 47 | 52 | 173 | 3 | 1953 |
| 205 | 7 | 19 | 212 | 15 | 10 | 196 | 191 | 13 | 23 | 20 | 189 | 216 | 192 | 17 | 208 | 11 | 209 | 1953 |
| 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 | 1302 |  |

According to colors the entries are as follows:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 3 | 24 | 25 | 26 | 7 | 28 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 |



```
53
```

$\begin{array}{llllllllllllllllllllllll}145 & 146 & 147 & 148 & 149 & 150 & 151 & 152 & 153 & 154 & 155 & 156 & 157 & 158 & 159 & 160 & 161 & 162 & 163 & 164\end{array}$

| 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 |

$$
\begin{array}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline 89 & 90 & 91 & 92 & 93 & 94 & 95 & 96 & 97 & 98 & 99 \\
\hline 117 & 118 & 119 & 120 & 121 & 122 & 123 & 124 & 125 & 126 & 127 \\
\hline & & & & & & & & 128 \\
\hline & & 101 & 102 & 103 & 104 & 105 & 106 & 107 & 108 & \\
\hline & & 109 & 110 & 111 & 112 & 113 & 114 & 115 & 116 & \\
\hline
\end{array}
$$

The distribution entries of above magic rectangles are as follows:

$$
\begin{aligned}
D_{12 \times 18} & :=\{1,2, \ldots, 216\} . \\
D_{10 \times 16} & :=\{29,30, \ldots, 188\} \quad \text { and } \quad D_{12 \times 18}:=\left\{1,2, \ldots, 28, D_{10 \times 16}, 189,190, \ldots, 216\right\} . \\
D_{8 \times 14} & :=\{53,54, \ldots, 164\} \quad \text { and } \quad D_{10 \times 16}:=\left\{29,30, \ldots, 52, D_{8 \times 14}, 165,166, \ldots, 188\right\} . \\
D_{6 \times 12} & :=\{73,74, \ldots, 144\} \quad \text { and } \quad D_{8 \times 14}:=\left\{53,54, \ldots, 72, D_{6 \times 12}, 145,146, \ldots, 164\right\} . \\
D_{4 \times 10} & :=\{89,90, \ldots, 128\} \quad \text { and } \quad D_{6 \times 12}:=\left\{73,74, \ldots, 88, D_{4 \times 10}, 129,130, \ldots, 144\right\} . \\
D_{2 \times 8} & :=\{101,102, \ldots, 116\} \quad \text { and } \quad D_{4 \times 10}:=\left\{89,90, \ldots, 100, D_{2 \times 8}, 117,118, \ldots, 128\right\} .
\end{aligned}
$$

More detail on bordered magic rectangles refer [86]. There are many magic squares are constructed based on this idea. See the author's work [55, $56,57,58,59,60,61,62,63,64,65,66]$.

### 2.2 Double Digits Magic Rectangles

Below we shall give two examples of double digits magic rectangles.
Let's consider a double digits magic rectangle of order $14 \times 20$ formed by 280 sequential entries, i.e., from 1 to 280 :

| 20 8 | 273 | 224 57 | 277 4 | 28 253 | 245 36 | 271 10 | 58 223 | 50 231 | 15 266 | 59 222 | 19 262 | 34 247 | 13 268 | 232 49 | 23 258 | 221 60 | 256 25 | 259 48 | 233 22 | 28 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 226 | 55 | 70 | 189 | 69 | 102 | 193 | 79 | 63 | 94 | 204 | 215 | 214 | 81 | 19 | 93 | 178 | 213 | 249 | 32 | 2810 |
| 2 | 44 | 92 | 21 | 212 | 179 | 88 | 202 | 218 | 187 | 77 | 66 | 67 | 200 | 90 | 188 | 68 | 103 | , | 30 | 2810 |
| 22 | 53 |  | 89 |  |  |  |  |  |  | 107 | 119 | 159 | 106 |  |  | 185 | 96 | 6 | 275 | 2810 |
| 25 | 29 | 2 | 80 | 17 | 112 | 108 | 11 | 12 | 12 | 17 | 16 | 122 | 17 | 16 | 13 | 84 | 197 | 243 | 38 | 2810 |
| 227 | 5 | 196 | 85 | 150 | 131 | 146 | 137 | 143 | 136 | 47 | 13 | 142 | 140 | 109 | 172 | 91 | 190 | 257 | 24 | 2810 |
| 26 | 255 | 186 | 95 | 11 | 16 | 135 | 14 | 138 | 14 | 13 | 14 | 13 | 14 | 15 | 125 | 194 | 87 | 2 | 279 | 2810 |
| 244 | 37 | 74 | 20 |  |  |  |  |  |  |  | 126 | 29 | 18 | 151 | 170 | 180 | 10 | 7 | 274 | 2810 |
| 229 | 52 | 209 | 72 | 120 | 165 | 105 | 153 | 115 | 157 | 160 | 155 | 152 | 163 | 111 | 130 | 64 | 217 | 27 | 254 | 2810 |
| 250 | 31 | 99 | 195 | 198 | 78 | 10 | 76 | 75 | 00 | 99 | 61 | 208 | 183 | 62 | 216 | 18 | 104 | 39 | 242 | 2810 |
| 16 | 265 | 86 | 182 | 83 | 203 | 71 | 205 | 206 | 18 | 82 | 220 | 73 | 98 | 219 | 65 | 177 | 97 | 269 | 12 | 2810 |
| 1 | 278 | 9 | 26 | 235 | 14 | 51 | 43 | 56 | 24 | 248 | 42 | 236 | 41 | 246 | 276 | 21 | 11 | 263 | 234 | 2810 |
| 3 | 280 | 272 | 17 | 46 | 267 | 330 | 238 | 225 | 40 | 33 | 239 | 45 | 240 | 35 | 5 | 260 | 270 | 47 | 18 | 2810 |

By double digits we understand that, except corners, all others rows or columns taken in pairs are of equal sums. Actually, these are double digits bordered magic rectangles, but for simplicity, we shall call it double digits magic rectangles. See below sums according to colors:

- Horizontal Sums in Pairs

| $\begin{gathered} 224 \\ 57 \end{gathered}$ | $\begin{gathered} 277 \\ 4 \end{gathered}$ | $\begin{gathered} 28 \\ 253 \end{gathered}$ | $\begin{gathered} 245 \\ 36 \end{gathered}$ | $\begin{gathered} 271 \\ 10 \end{gathered}$ | $\begin{gathered} 58 \\ 223 \end{gathered}$ | $\begin{gathered} 50 \\ 231 \end{gathered}$ | $\begin{gathered} 15 \\ 266 \end{gathered}$ | $\begin{gathered} 59 \\ 222 \end{gathered}$ | $\begin{gathered} 19 \\ 262 \end{gathered}$ | $\begin{gathered} 34 \\ 247 \end{gathered}$ | $\begin{gathered} 13 \\ 268 \end{gathered}$ | $\begin{gathered} 232 \\ 49 \end{gathered}$ | $\begin{gathered} 23 \\ 258 \end{gathered}$ | $\begin{gathered} 221 \\ 60 \end{gathered}$ | $\begin{gathered} 256 \\ 25 \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |
| 9 | 264 | 235 | 14 | 51 | 43 | 56 | 241 | 248 | 42 | 236 | 41 | 246 | 276 | 21 | 11 |
| 272 | 17 | 46 | 267 | 230 | 238 | 225 | 40 | 33 | 239 | 45 | 240 | 35 | 5 | 260 | 270 |
| 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |
|  |  | 69 | 102 | 193 | 79 | 63 | 94 | 204 | 215 | 214 | 81 | 191 | 93 |  |  |
|  |  | 212 | 179 | 88 | 202 | 218 | 187 | 77 | 66 | 67 | 200 | 90 | 188 |  |  |
|  |  | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |  |  |
|  |  | 198 | 78 | 210 | 76 | 75 | 100 | 199 | 61 | 208 | 183 | 62 | 216 |  |  |
|  |  | 83 | 203 | 71 | 205 | 206 | 181 | 82 | 220 | 73 | 98 | 219 | 65 |  |  |
|  |  | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |  |  |
|  |  |  |  | 173 | 168 | 158 | 154 | 107 | 119 | 159 | 106 |  |  |  |  |
|  |  |  |  | 108 | 113 | 123 | 127 | 174 | 162 | 122 | 175 |  |  |  |  |
|  |  |  |  | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 176 | 128 | 166 | 124 | 121 | 126 | 129 | 118 |  |  |  |  |
|  |  |  |  | 105 | 153 | 115 | 157 | 160 | 155 | 152 | 163 |  |  |  |  |
|  |  |  |  | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 146 | 137 | 143 | 136 | 147 | 133 | 142 | 140 |  |  |  |  |
|  |  |  |  | 135 | 144 | 138 | 145 | 134 | 148 | 139 | 141 |  |  |  |  |
|  |  |  |  | 281 | 281 | 281 | 281 | 281 | 281 | 281 | 281 |  |  |  |  |

- Vertical Sums in Pairs

| 226 | 55 | 281 | 249 | 32 | 281 | 192 | 89 | 281 | 185 | 96 | 281 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 237 | 44 | 281 | 251 | 30 | 281 | 201 | 80 | 281 | 84 | 197 | 281 |
| 228 | 53 | 281 | 6 | 275 | 281 | 196 | 85 | 281 | 91 | 190 | 281 |
| 252 | 29 | 281 | 243 | 38 | 281 | 186 | 95 | 281 | 194 | 87 | 281 |
| 227 | 54 | 281 | 257 | 24 | 281 | 74 | 207 | 281 | 180 | 101 | 281 |
| 26 | 255 | 281 | 2 | 279 | 281 | 209 | 72 | 281 | 64 | 217 | 281 |
| 244 | 37 | 281 | 7 | 274 | 281 |  |  |  |  |  |  |
| 229 | 52 | 281 | 27 | 254 | 281 | 150 | 131 | 281 | 109 | 172 | 281 |
| 250 | 31 | 281 | 39 | 242 | 281 | 117 | 164 | 281 | 156 | 125 | 281 |
| 16 | 265 | 281 | 269 | 12 | 281 |  |  |  |  |  |  |

More detail on double digits magic rectangles refer [86]. There are many magic squares are constructed based on this idea. See the author's work [67, 68, 69, 70, 71, 72]. Magic squares of orders 7 to 108 can be seen in [81].

### 2.3 Cornered Magic Rectangle

Let's consider a cornered magic rectangle of order $10 \times 24$ formed by 240 sequential entries, i.e., from 1 to 240:

| 115 | 113 | 135 | 124 | 136 | 116 | 110 | 111 | 109 | 133 | 129 | 119 | 123 | 107 | 127 | 121 | 98 | 143 | 167 | 74 | 206 | 35 | 8 | 233 | 2892 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 126 | 128 | 106 | 117 | 105 | 125 | 131 | 130 | 132 | 108 | 112 | 122 | 118 | 134 | 114 | 120 | 90 | 151 | 77 | 164 | 36 | 205 | 229 | 12 | 2892 |
| 141 | 96 | 92 | 139 | 154 | 101 | 144 | 99 | 91 | 103 | 88 | 137 | 156 | 86 | 152 | 147 | 148 | 95 | 76 | 165 | 57 | 184 | 213 | 28 | 2892 |
| 100 | 145 | 149 | 102 | 87 | 140 | 97 | 142 | 150 | 138 | 153 | 104 | 85 | 155 | 89 | 94 | 146 | 93 | 174 | 67 | 198 | 43 | 27 | 214 | 2892 |
| 173 | 177 | 175 | 73 | 83 | 180 | 62 | 63 | 71 | 84 | 171 | 163 | 166 | 161 | 72 | 162 | 159 | 65 | 69 | 81 | 202 | 39 | 209 | 32 | 2892 |
| 68 | 64 | 66 | 168 | 158 | 61 | 179 | 178 | 170 | 157 | 70 | 78 | 75 | 80 | 169 | 79 | 82 | 176 | 160 | 172 | 34 | 207 | 240 | 1 | 2892 |
| 48 | 197 | 182 | 188 | 55 | 190 | 196 | 54 | 40 | 58 | 46 | 56 | 200 | 191 | 181 | 33 | 38 | 52 | 49 | 199 | 194 | 204 | 224 | 17 | 2892 |
| 193 | 44 | 59 | 53 | 186 | 51 | 45 | 187 | 201 | 183 | 195 | 185 | 41 | 50 | 60 | 208 | 203 | 189 | 192 | 42 | 37 | 47 | 25 | 216 | 2892 |
| 13 | 5 | 239 | 231 | 6 | 237 | 20 | 220 | 26 | 30 | 227 | 11 | 15 | 219 | 16 | 238 | 31 | 217 | 223 | 9 | 212 | 222 | 7 | 218 | 2892 |
| 228 | 236 | 2 | 10 | 235 | 4 | 221 | 21 | 215 | 211 | 14 | 230 | 226 | 22 | 225 | 3 | 210 | 24 | 18 | 232 | 29 | 19 | 23 | 234 | 2892 |
| 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 | 1205 |  |

In this case the distribution is $D_{10 \times 24}:=\{1,2, \ldots, 240\}$. Except the corners, the numbers are of equal sums in pairs. Distributions in colors as follows:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 |

$$
\begin{array}{ccccccccccccccccccccccccc}
61 & 62 & 63 & 64 & 65 & 66 & 67 & 68 & 69 & 70 & 71 & 72 & 73 & 74 & 75 & 76 & 77 & 78 & 79 & 80 & 81 & 82 & 83 & 84 \\
157 & 158 & 159 & 160 & 161 & 162 & 163 & 164 & 165 & 166 & 167 & 168 & 169 & 170 & 171 & 172 & 173 & 174 & 175 & 176 & 177 & 178 & 179 & 180
\end{array}
$$

$\begin{array}{llllllllllllllllllll}85 & 86 & 87 & 88 & 89 & 90 & 91 & 92 & 93 & 94 & 95 & 96 & 97 & 98 & 99 & 100 & 101 & 102 & 103 & 104\end{array}$ $\begin{array}{llllllllllllllllllllll}137 & 138 & 139 & 140 & 141 & 142 & 143 & 144 & 145 & 146 & 147 & 148 & 149 & 150 & 151 & 152 & 153 & 154 & 155 & 156\end{array}$

```
115}105106 107 108 109 110 111 112 113 114 116 117 118 119 120
121}12
```

$$
\begin{aligned}
& \begin{array}{lllllllllllllllllllllllllllll}
33 & 34 & 35 & 36 & 37 & 38 & 39 & 40 & 41 & 42 & 43 & 44 & 45 & 46 & 47 & 48 & 49 & 50 & 51 & 52 & 53 & 54 & 55 & 56 & 57 & 58 & 59 & 60
\end{array}
\end{aligned}
$$

Except the last entries, the others are known by half-sequential entries.
More detail on cornered magic rectangles refer [86]. Few work on magic squares connected with cornered magic rectangles can be seen in [82, 83, 84, 85].

The aim of this work is to write magic squares of order 34 using four equal sums different types of magic rectangles.

## 3 Magic Squares of Order 34

Initially, let's write two basic magic squares of order 34. These are known by double digits and cornered magic squares of order 34:



### 3.1 Magic Squares of Order 34 with Bordered Magic Rectangles

Below are examples of magic squares of order 34 centered in magic squares of order $6,10,14,18,22$ and 26 respectively. These are constructed with four equal sums bordered magic rectangles of orders $14 \times 20,12 \times 22,10 \times 24,8 \times 26,6 \times 28$ and $4 \times 30$ respectively.


| 28 |  |  |  |  |  |  | Jer J. Ta | neja |  | https://inderjtaneja.com/ |  |  |  |  |  | https://numbers-magic.com/ |  |  |  |  | @IJTANEJA |  |  |  |  | $34 \times 34$ |  |  | 150 | 1019 | 153 | 1018 | 1000 | $\begin{array}{\|l\|} 19669 \\ \hline 19669 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1154 | 1152 | 28 | 1140 | 1133 | 10 | 2 | 1143 | 1 | 16 | 1127 | 1130 | 32 | 1131 | 1145 | 1138 | 22 | 13 | 31 | 1134 | 20 | 25 | 1022 | 136 | 141 | 147 | 1017 | 143 | 996 |  |  |  |  |  |  |
| 4 | 1101 | 1113 | 1124 | 1111 | 1118 | 1107 | 1110 | 36 | 1116 | 1104 | 43 | 52 | 34 | 55 | 58 | 38 | 1115 | 35 | 40 | 60 | 1153 | 1020 | 969 | 189 | 976 | 980 | 186 | 169 | 191 | 977 | 183 | 965 | 137 | 19669 |
| 9 | 57 | 73 | 1073 | 1074 | 1092 | 1091 | 1086 | 1090 | 77 | 1076 | 74 | 68 | 72 | 80 | 1094 | 1093 | 70 | 69 | 61 | 1100 | 1148 | 160 | 981 | 205 | 214 | 208 | 947 | 946 | 950 | 194 | 964 | 176 | 997 | 19669 |
| 15 | 1108 | 82 | 1069 | 1058 | 1061 | 1066 | 86 | 97 | 95 | 100 | 1065 | 89 | 90 | 1056 | 1063 | 1070 | 93 | 98 | 1075 | 49 | 1142 | 1008 | 992 | 941 | 937 | 235 | 234 | 217 | 921 | 927 | 216 | 165 | 149 | 19669 |
| 1149 | 1112 | 76 | 103 | 113 | 1050 | 1038 | 108 | 109 | 1045 | 1039 | 1052 | 111 | 1042 | 114 | 120 | 1041 | 117 | 1054 | 1081 | 45 | 8 | 1001 | 979 | 942 | 926 | 245 | 919 | 242 | 908 | 231 | 215 | 178 | 156 | 19669 |
| 11 | 54 | 1079 | 102 | 1051 | 1031 | 1030 | 130 | 1025 | 123 | 122 | 131 | 124 | 1032 | 129 | 1036 | 1029 | 106 | 1055 | 78 | 1103 | 1146 | 142 | 986 | 960 | 929 | 918 | 899 | 258 | 239 | 228 | 197 | 171 | 1015 | 19669 |
| 1128 | 37 | 1078 | 85 | 110 | 126 | 127 | 1027 | 132 | 1034 | 1035 | 1026 | 1033 | 125 | 1028 | 121 | 128 | 1047 | 1072 | 79 | 1120 | 29 | 134 | 975 | 959 | 934 | 906 | 262 | 895 | 251 | 223 | 198 | 182 | 1023 | 19669 |
| 18 | 59 | 1082 | 1053 | 1040 | 107 | 119 | 1049 | 1048 | 112 | 118 | 105 | 1046 | 115 | 1043 | 1037 | 116 | 1044 | 104 | 75 | 1098 | 1139 | 1011 | 978 | 954 | 218 | 240 | 900 | 257 | 917 | 939 | 203 | 179 | 146 | 19669 |
| 1151 | 1109 | 62 | 1059 | 99 | 96 | 91 | 1071 | 1060 | 1062 | 1057 | 92 | 1068 | 1067 | 101 | 94 | 87 | 1064 | 88 | 1095 | 48 | 6 | 133 | 168 | 958 | 229 | 241 | 893 | 264 | 916 | 928 | 199 | 989 | 1024 | 19669 |
| 21 | 51 | 1096 | 84 | 83 | 65 | 66 | 71 | 67 | 1080 | 81 | 1083 | 1089 | 1085 | 1077 | 63 | 64 | 1087 | 1088 | 1084 | 1106 | 1136 | 148 | 984 | 209 | 227 | 913 | 255 | 902 | 244 | 930 | 948 | 173 | 1009 | 19669 |
| 1150 | 1097 | 44 | 33 | 46 | 39 | 50 | 47 | 1121 | 41 | 53 | 1114 | 1105 | 1123 | 1102 | 1099 | 1119 | 42 | 1122 | 1117 | 56 | 7 | 995 | 167 | 944 | 232 | 907 | 254 | 903 | 250 | 925 | 213 | 990 | 162 | 19669 |
| 1132 | 5 | 1129 | 17 | 24 | 1147 | 1155 | 14 | 1156 | 1141 | 30 | 27 | 1125 | 26 | 12 | 19 | 1135 | 1144 | 1126 | 23 | 1137 | 3 | 998 | 175 | 206 | 933 | 920 | 263 | 894 | 237 | 224 | 951 | 982 | 159 | 19669 |
| 758 | 400 | 405 | 411 | 753 | 407 | 732 | 414 | 755 | 417 | 754 | 736 | 619 | 614 | 544 | 612 | 546 | 542 | 532 | 626 | 530 | 620 | 164 | 184 | 200 | 221 | 243 | 256 | 901 | 914 | 936 | 957 | 973 | 993 | 19669 |
| 756 | 705 | 453 | 712 | 716 | 450 | 433 | 455 | 713 | 447 | 701 | 401 | 541 | 554 | 548 | 608 | 610 | 597 | 559 | 599 | 553 | 616 | 999 | 166 | 204 | 222 | 910 | 898 | 259 | 247 | 935 | 953 | 991 | 158 | 19669 |
| 424 | 717 | 469 | 478 | 472 | 683 | 682 | 686 | 458 | 700 | 440 | 733 | 617 | 551 | 592 | 590 | 563 | 596 | 564 | 566 | 606 | 540 | 1013 | 187 | 212 | 924 | 246 | 261 | 896 | 911 | 233 | 945 | 970 | 144 | 19669 |
| 744 | 728 | 677 | 673 | 499 | 498 | 481 | 657 | 663 | 480 | 429 | 413 | 539 | 552 | 562 | 577 | 582 | 571 | 584 | 595 | 605 | 618 | 1006 | 190 | 962 | 931 | 252 | 904 | 253 | 905 | 226 | 195 | 967 | 151 | 19669 |
| 737 | 715 | 678 | 662 | 509 | 655 | 506 | 644 | 495 | 479 | 442 | 420 | 624 | 557 | 568 | 572 | 583 | 578 | 581 | 589 | 600 | 533 | 154 | 170 | 961 | 938 | 909 | 897 | 260 | 248 | 219 | 196 | 987 | 1003 | 19669 |
| 406 | 722 | 696 | 665 | 654 | 635 | 522 | 503 | 492 | 461 | 435 | 751 | 529 | 607 | 570 | 586 | 573 | 580 | 575 | 587 | 550 | 628 | 145 | 983 | 202 | 225 | 249 | 238 | 915 | 912 | 932 | 955 | 174 | 1012 | 19669 |
| 398 | 711 | 695 | 670 | 642 | 636 | 521 | 515 | 487 | 462 | 446 | 759 | 621 | 602 | 588 | 579 | 576 | 585 | 574 | 569 | 555 | 536 | 163 | 972 | 201 | 230 | 922 | 923 | 940 | 236 | 220 | 956 | 185 | 994 | 19669 |
| 747 | 714 | 690 | 482 | 504 | 526 | 631 | 653 | 675 | 467 | 443 | 410 | 535 | 601 | 591 | 567 | 594 | 561 | 593 | 565 | 556 | 622 | 1002 | 172 | 193 | 943 | 949 | 210 | 211 | 207 | 963 | 952 | 985 | 155 | 19669 |
| 397 | 432 | 694 | 493 | 505 | 633 | 524 | 652 | 664 | 463 | 725 | 760 | 623 | 604 | 609 | 549 | 547 | 560 | 598 | 558 | 603 | 534 | 152 | 192 | 968 | 181 | 177 | 971 | 988 | 966 | 180 | 974 | 188 | 1005 | 19669 |
| 412 | 720 | 473 | 491 | 649 | 519 | 638 | 508 | 666 | 684 | 437 | 745 | 537 | 543 | 613 | 545 | 611 | 615 | 625 | 531 | 627 | 538 | 157 | 1021 | 1016 | 1010 | 140 | 1014 | 161 | 1007 | 138 | 1004 | 139 | 135 | 19669 |
| 731 | 431 | 680 | 496 | 643 | 518 | 639 | 514 | 661 | 477 | 726 | 426 | 890 | 888 | 292 | 876 | 869 | 274 | 266 | 879 | 265 | 280 | 863 | 866 | 296 | 867 | 881 | 874 | 286 | 277 | 295 | 870 | 284 | 289 | 19669 |
| 734 | 439 | 470 | 669 | 656 | 527 | 630 | 501 | 488 | 687 | 718 | 423 | 268 | 837 | 849 | 860 | 847 | 854 | 843 | 846 | 300 | 852 | 299 | 307 | 316 | 298 | 319 | 322 | 302 | 851 | 840 | 304 | 324 | 889 | 19669 |
| 428 | 448 | 464 | 485 | 507 | 520 | 637 | 650 | 672 | 693 | 709 | 729 | 273 | 321 | 337 | 809 | 810 | 828 | 827 | 822 | 826 | 341 | 812 | 338 | 332 | 336 | 344 | 830 | 829 | 334 | 333 | 325 | 836 | 884 | 19669 |
| 735 | 430 | 468 | 486 | 646 | 634 | 523 | 511 | 671 | 689 | 727 | 422 | 279 | 844 | 346 | 805 | 794 | 797 | 802 | 350 | 361 | 359 | 354 | 801 | 353 | 364 | 792 | 799 | 806 | 357 | 362 | 811 | 313 | 878 | 19669 |
| 749 | 451 | 476 | 660 | 510 | 640 | 517 | 647 | 497 | 681 | 706 | 408 | 885 | 848 | 340 | 367 | 377 | 786 | 774 | 372 | 373 | 781 | 778 | 788 | 375 | 775 | 378 | 384 | 777 | 381 | 790 | 817 | 309 | 272 | 19669 |
| 742 | 454 | 698 | 667 | 516 | 525 | 632 | 641 | 490 | 459 | 703 | 415 | 275 | 318 | 815 | 366 | 787 | 767 | 768 | 394 | 761 | 387 | 766 | 395 | 388 | 386 | 393 | 772 | 765 | 370 | 791 | 342 | 839 | 882 | 19669 |
| 418 | 434 | 697 | 674 | 645 | 629 | 528 | 512 | 483 | 460 | 723 | 739 | 864 | 301 | 814 | 349 | 374 | 390 | 389 | 763 | 396 | 770 | 391 | 762 | 769 | 771 | 764 | 385 | 392 | 783 | 808 | 343 | 856 | 293 | 19669 |
| 409 | 719 | 466 | 489 | 513 | 502 | 651 | 648 | 668 | 691 | 438 | 748 | 282 | 323 | 818 | 789 | 776 | 371 | 383 | 785 | 784 | 376 | 379 | 369 | 782 | 382 | 779 | 773 | 380 | 780 | 368 | 339 | 834 | 875 | 19669 |
| 427 | 708 | 465 | 494 | 658 | 659 | 676 | 500 | 484 | 692 | 449 | 730 | 887 | 845 | 326 | 795 | 363 | 360 | 355 | 807 | 796 | 798 | 803 | 356 | 804 | 793 | 365 | 358 | 351 | 800 | 352 | 831 | 312 | 270 | 19669 |
| 738 | 436 | 457 | 679 | 685 | 474 | 475 | 471 | 699 | 688 | 721 | 419 | 285 | 315 | 832 | 348 | 347 | 329 | 330 | 335 | 331 | 816 | 345 | 819 | 825 | 821 | 813 | 327 | 328 | 823 | 824 | 820 | 842 | 872 | 19669 |
| 416 | 456 | 704 | 445 | 441 | 707 | 724 | 702 | 444 | 710 | 452 | 741 | 886 | 833 | 308 | 297 | 310 | 303 | 314 | 311 | 857 | 305 | 858 | 850 | 841 | 859 | 838 | 835 | 855 | 306 | 317 | 853 | 320 | 271 | 19669 |
| 421 | 757 | 752 | 746 | 404 | 750 | 425 | 743 | 402 | 740 | 403 | 399 | 868 | 269 | 865 | 281 | 288 | 883 | 891 | 278 | 892 | 877 | 294 | 291 | 861 | 290 | 276 | 283 | 871 | 880 | 862 | 287 | 873 | 267 | 19669 |
| 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 |



| 126 |  |  |  |  |  |  | er J. Ta | neja |  | https://inderitaneja.com/ |  |  |  |  |  | https://numbers-magic.com/ |  |  |  |  | @IJTANEJA |  |  |  | $34 \times 34$ |  |  |  |  |  |  |  |  | 19669 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 10 | 4 | 20 | 26 | 1154 | 9 | 1139 | 32 | 2 | 1136 | 1152 | 15 | 1151 | 1146 | 14 | 1133 | 1138 | 16 | 1132 | 23 | 1128 | 22 | 12 | 1144 | 1156 | 1127 | 114 | 1036 | 1025 | 135 | 1046 | 1026 | 112 | 134 | 19669 |
| 1140 | 1113 | 54 | 41 | 47 | 1108 | 46 | 53 | 1124 | 39 | 38 | 1106 | 42 | 60 | 35 | 1114 | 1102 | 56 | 1105 | 48 | 1099 | 1121 | 1112 | 1098 | 1123 | 17 | 108 | 1009 | 1003 | 144 | 1016 | 161 | 138 | 1049 | 19669 |
| 1129 | 1107 | 69 | 73 | 72 | 1087 | 64 | 66 | 84 | 81 | 1077 | 1089 | 1078 | 1094 | 74 | 1080 | 1081 | 1086 | 65 | 1095 | 1079 | 83 | 1075 | 75 | 50 | 28 | 124 | 158 | 173 | 992 | 171 | 978 | 999 | 1033 | 19669 |
| 31 | 40 | 1096 | 103 | 93 | 104 | 86 | 95 | 87 | 1056 | 98 | 1072 | 91 | 1063 | 1067 | 89 | 1069 | 99 | 1055 | 1057 | 1060 | 1061 | 1065 | 61 | 1117 | 1126 | 130 | 145 | 177 | 208 | 949 | 980 | 1012 | 1027 | 19669 |
| 1150 | 1120 | 67 | 1054 | 1064 | 1053 | 1071 | 1062 | 1070 | 101 | 1059 | 85 | 1066 | 94 | 90 | 1068 | 88 | 1058 | 102 | 100 | 97 | 96 | 92 | 1090 | 37 | 7 | 1050 | 151 | 176 | 197 | 960 | 981 | 1006 | 107 | 19669 |
| 1130 | 57 | 1082 | 1084 | 1085 | 70 | 1093 | 1091 | 1073 | 1076 | 80 | 68 | 79 | 63 | 1083 | 77 | 76 | 71 | 1092 | 62 | 78 | 1074 | 82 | 1088 | 1100 | 27 | 113 | 1004 | 985 | 968 | 189 | 172 | 153 | 1044 | 19669 |
| 8 | 34 | 1103 | 1116 | 1110 | 49 | 1111 | 1104 | 33 | 1118 | 1119 | 51 | 1115 | 1097 | 1122 | 43 | 55 | 1101 | 52 | 1109 | 58 | 36 | 45 | 59 | 44 | 1149 | 1035 | 150 | 168 | 190 | 967 | 989 | 1007 | 122 | 19669 |
| 30 | 1153 | 1137 | 1131 | 3 | 1148 | 18 | 1125 | 1155 | 21 | 5 | 1142 | 6 | 11 | 1143 | 24 | 19 | 1141 | 25 | 1134 | 29 | 1135 | 1145 | 13 | 1 | 1147 | 1028 | 157 | 170 | 199 | 958 | 987 | 1000 | 129 | 19669 |
| 322 | 828 | 817 | 343 | 838 | 818 | 320 | 342 | 429 | 417 | 739 | 726 | 727 | 432 | 427 | 733 | 737 | 731 | 419 | 425 | 461 | 457 | 699 | 464 | 698 | 692 | 106 | 1020 | 188 | 191 | 966 | 969 | 137 | 1051 | 19669 |
| 316 | 801 | 795 | 352 | 808 | 369 | 346 | 841 | 736 | 713 | 441 | 435 | 440 | 436 | 715 | 724 | 723 | 720 | 438 | 421 | 453 | 474 | 678 | 682 | 480 | 704 | 1032 | 143 | 185 | 952 | 205 | 972 | 1014 | 125 | 19669 |
| 332 | 366 | 381 | 784 | 379 | 770 | 791 | 825 | 422 | 443 | 445 | 711 | 708 | 705 | 448 | 450 | 451 | 710 | 714 | 735 | 468 | 477 | 672 | 485 | 680 | 689 | 1048 | 142 | 973 | 202 | 955 | 184 | 1015 | 109 | 19669 |
| 338 | 353 | 385 | 415 | 742 | 772 | 804 | 819 | 729 | 439 | 712 | 446 | 449 | 452 | 709 | 707 | 706 | 447 | 718 | 428 | 690 | 476 | 669 | 488 | 681 | 467 | 119 | 1002 | 983 | 207 | 950 | 174 | 155 | 1038 | 19669 |
| 842 | 359 | 384 | 405 | 752 | 773 | 798 | 315 | 423 | 719 | 716 | 722 | 717 | 721 | 442 | 433 | 434 | 437 | 444 | 734 | 691 | 471 | 675 | 482 | 686 | 466 | 1047 | 146 | 974 | 195 | 962 | 183 | 1011 | 110 | 19669 |
| 321 | 796 | 777 | 760 | 397 | 380 | 361 | 836 | 732 | 740 | 418 | 431 | 430 | 725 | 730 | 424 | 420 | 426 | 738 | 728 | 703 | 472 | 486 | 671 | 685 | 454 | 1042 | 164 | 990 | 959 | 198 | 167 | 993 | 115 | 19669 |
| 827 | 358 | 376 | 398 | 759 | 781 | 799 | 330 | 537 | 628 | 530 | 621 | 531 | 624 | 566 | 590 | 563 | 596 | 564 | 592 | 463 | 679 | 484 | 673 | 478 | 694 | 118 | 139 | 178 | 963 | 194 | 979 | 1018 | 1039 | 19669 |
| 820 | 365 | 378 | 407 | 750 | 779 | 792 | 337 | 525 | 605 | 551 | 547 | 611 | 632 | 595 | 577 | 582 | 571 | 584 | 562 | 697 | 688 | 481 | 676 | 469 | 460 | 1029 | 1010 | 976 | 193 | 964 | 181 | 147 | 128 | 19669 |
| 314 | 812 | 396 | 399 | 758 | 761 | 345 | 843 | 540 | 549 | 558 | 599 | 608 | 617 | 589 | 572 | 583 | 578 | 581 | 568 | 701 | 687 | 487 | 670 | 470 | 456 | 1034 | 998 | 977 | 965 | 192 | 180 | 159 | 123 | 19669 |
| 824 | 351 | 393 | 744 | 413 | 764 | 806 | 333 | 618 | 548 | 597 | 560 | 609 | 539 | 587 | 586 | 573 | 580 | 575 | 570 | 695 | 684 | 674 | 483 | 473 | 462 | 120 | 160 | 982 | 203 | 954 | 175 | 997 | 1037 | 19669 |
| 840 | 350 | 765 | 410 | 747 | 392 | 807 | 317 | 619 | 543 | 600 | 557 | 614 | 538 | 569 | 579 | 576 | 585 | 574 | 588 | 455 | 677 | 479 | 475 | 683 | 702 | 136 | 1001 | 169 | 951 | 206 | 988 | 156 | 1021 | 19669 |
| 327 | 794 | 775 | 416 | 741 | 382 | 363 | 830 | 631 | 544 | 603 | 554 | 613 | 526 | 565 | 567 | 594 | 561 | 593 | 591 | 465 | 700 | 458 | 693 | 459 | 696 | 127 | 152 | 991 | 953 | 204 | 166 | 1005 | 1030 | 19669 |
| 839 | 354 | 766 | 403 | 754 | 391 | 803 | 318 | 535 | 607 | 556 | 601 | 550 | 622 | 501 | 499 | 504 | 654 | 655 | 667 | 489 | 661 | 665 | 659 | 491 | 497 | 1024 | 995 | 975 | 956 | 201 | 182 | 162 | 133 | 19669 |
| 834 | 372 | 782 | 751 | 406 | 375 | 785 | 323 | 625 | 616 | 553 | 604 | 541 | 532 | 664 | 641 | 513 | 512 | 507 | 508 | 643 | 652 | 651 | 648 | 510 | 493 | 126 | 1017 | 187 | 957 | 200 | 970 | 140 | 1031 | 19669 |
| 326 | 347 | 386 | 755 | 402 | 771 | 810 | 831 | 629 | 615 | 559 | 598 | 542 | 528 | 494 | 515 | 522 | 633 | 636 | 639 | 638 | 523 | 517 | 520 | 642 | 663 | 116 | 1008 | 971 | 961 | 196 | 186 | 149 | 1041 | 19669 |
| 344 | 802 | 768 | 401 | 756 | 389 | 355 | 813 | 623 | 612 | 602 | 555 | 545 | 534 | 657 | 511 | 635 | 524 | 521 | 518 | 519 | 634 | 640 | 637 | 646 | 500 | 1040 | 994 | 179 | 165 | 986 | 984 | 163 | 117 | 19669 |
| 826 | 790 | 769 | 757 | 400 | 388 | 367 | 331 | 527 | 546 | 606 | 610 | 552 | 630 | 495 | 647 | 644 | 645 | 650 | 649 | 514 | 505 | 506 | 509 | 516 | 662 | 1052 | 1019 | 154 | 1013 | 141 | 996 | 148 | 105 | 19669 |
| 328 | 368 | 774 | 411 | 746 | 383 | 789 | 829 | 533 | 529 | 627 | 536 | 626 | 620 | 660 | 658 | 653 | 503 | 502 | 490 | 668 | 496 | 492 | 498 | 666 | 656 | 1023 | 121 | 132 | 1022 | 111 | 131 | 1045 | 1043 | 19669 |
| 821 | 793 | 377 | 743 | 414 | 780 | 364 | 336 | 218 | 212 | 228 | 234 | 946 | 217 | 931 | 924 | 210 | 928 | 944 | 223 | 943 | 938 | 222 | 925 | 930 | 224 | 240 | 231 | 920 | 230 | 220 | 936 | 948 | 919 | 19669 |
| 335 | 360 | 783 | 745 | 412 | 374 | 797 | 822 | 932 | 905 | 262 | 249 | 255 | 900 | 254 | 261 | 916 | 247 | 246 | 898 | 250 | 268 | 243 | 906 | 894 | 264 | 897 | 256 | 891 | 913 | 904 | 890 | 915 | 225 | 19669 |
| 816 | 787 | 767 | 748 | 409 | 390 | 370 | 341 | 921 | 899 | 277 | 281 | 280 | 881 | 272 | 274 | 292 | 289 | 869 | 879 | 870 | 886 | 282 | 872 | 873 | 878 | 273 | 887 | 871 | 291 | 867 | 283 | 258 | 236 | 19669 |
| 334 | 809 | 395 | 749 | 408 | 762 | 348 | 823 | 239 | 248 | 888 | 311 | 301 | 864 | 294 | 303 | 295 | 848 | 306 | 312 | 299 | 855 | 859 | 297 | 861 | 307 | 847 | 849 | 852 | 853 | 857 | 269 | 909 | 918 | 19669 |
| 324 | 800 | 763 | 753 | 404 | 394 | 357 | 833 | 942 | 912 | 275 | 846 | 856 | 293 | 863 | 854 | 862 | 309 | 851 | 845 | 858 | 302 | 298 | 860 | 296 | 850 | 310 | 308 | 305 | 304 | 300 | 882 | 245 | 215 | 19669 |
| 832 | 786 | 387 | 373 | 778 | 776 | 371 | 325 | 922 | 265 | 874 | 876 | 877 | 276 | 885 | 883 | 865 | 868 | 288 | 278 | 287 | 271 | 875 | 285 | 284 | 279 | 884 | 270 | 286 | 866 | 290 | 880 | 892 | 235 | 19669 |
| 844 | 811 | 362 | 805 | 349 | 788 | 356 | 313 | 216 | 242 | 895 | 908 | 902 | 257 | 903 | 896 | 241 | 910 | 911 | 259 | 907 | 889 | 914 | 251 | 263 | 893 | 260 | 901 | 266 | 244 | 253 | 267 | 252 | 941 | 19669 |
| 815 | 329 | 340 | 814 | 319 | 339 | 837 | 835 | 238 | 945 | 929 | 923 | 211 | 940 | 226 | 233 | 947 | 229 | 213 | 934 | 214 | 219 | 935 | 232 | 227 | 933 | 917 | 926 | 237 | 927 | 937 | 221 | 209 | 939 | 19669 |
| 19669 | 19669 | 19 | 196 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 69 | 69 | 69 | 69 | 69 | 69 | 669 | 669 | 69 | 669 | 669 | 669 | 969 | 669 | 669 | 669 | 19669 | 19669 |




More examples of similar kind are given in pdf file in author's site https://shorturl.at/ckptR.

### 3.2 Magic Squares of Order 34 with Double Digits Magic Rectangles

Below are examples of magic squares of order 34 centered in magic squares of order $6,10,14,18$ and 22 respectively. These are constructed with four equal sums double digits magic rectangles of orders $14 \times 20,12 \times 22,10 \times 24,8 \times 26$ and $6 \times 28$ respectively.

| Inder J. Taneja |  |  |  |  |  |  |  |  |  | https://inderjtaneja.com/ |  |  |  |  |  | https://numbers-magic.com/ |  |  |  |  |  | @IJTANEJA |  |  |  | $34 \times 34$ |  |  |  |  |  |  |  | $\begin{array}{\|l\|} 19669 \\ \hline 19669 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 50 | 1152 | 58 | 1103 | 32 | 6 | 1138 | 1112 | 59 | 1139 | 1120 | 1132 | 47 | 4 | 1108 | 43 | 10 | 1100 | 1105 | 52 | 190 | 967 | 175 | 983 | 148 | 993 | 964 | 996 | 166 | 195 | 196 | 160 | 987 | 979 |  |
| 1107 | 5 | 1099 | 54 | 1125 | 1151 | 19 | 45 | 1098 | 18 | 37 | 25 | 1110 | 1153 | 49 | 1114 | 1147 | 57 | 1118 | 39 | 1012 | 145 | 982 | 174 | 1009 | 164 | 193 | 161 | 991 | 962 | 961 | 997 | 170 | 178 | 19669 |
| 35 | 1122 | 78 | 101 | 1076 | 1061 | 94 | 98 | 1069 | 66 | 99 | 1062 | 1065 | 1074 | 1082 | 74 | 1078 | 79 | 1124 | 33 | 198 | 959 | 218 | 939 | 932 | 914 | 948 | 217 | 227 | 231 | 935 | 224 | 176 | 981 | 19669 |
| 1123 | 34 | 1079 | 1056 | 81 | 96 | 1063 | 1059 | 88 | 1091 | 1058 | 95 | 92 | 83 | 75 | 1083 | 1095 | 62 | 1143 | 14 | 963 | 194 | 241 | 916 | 225 | 243 | 209 | 940 | 930 | 926 | 222 | 933 | 180 | 977 | 19669 |
| 8 | 1149 | 1072 | 85 | 131 | 118 | 1047 | 1036 | 108 | 1051 | 123 | 1027 | 107 | 1037 | 112 | 1045 | 90 | 1067 | 44 | 1113 | 172 | 985 | 936 | 221 | 271 | 886 | 895 | 251 | 902 | 266 | 240 | 917 | 181 | 976 | 19669 |
| 1133 | 24 | 1054 | 103 | 1026 | 1039 | 110 | 121 | 1049 | 106 | 1034 | 130 | 1050 | 120 | 1025 | 132 | 67 | 1090 | 60 | 1097 | 146 | 1011 | 921 | 236 | 258 | 899 | 262 | 906 | 255 | 891 | 952 | 205 | 990 | 167 | 19669 |
| 1104 | 53 | 1088 | 69 | 1035 | 122 | 1022 | 136 | 1023 | 139 | 138 | 1020 | 1017 | 133 | 1048 | 109 | 1053 | 104 | 31 | 1126 | 998 | 159 | 234 | 923 | 907 | 250 | 882 | 275 | 898 | 259 | 928 | 229 | 989 | 168 | 19669 |
| 1136 | 21 | 77 | 1080 | 111 | 1046 | 135 | 1021 | 134 | 1018 | 1019 | 137 | 140 | 1024 | 129 | 1028 | 68 | 1089 | 13 | 1144 | 972 | 185 | 239 | 918 | 896 | 261 | 279 | 878 | 265 | 892 | 204 | 953 | 1015 | 142 | 19669 |
| 26 | 1131 | 87 | 1070 | 1042 | 115 | 1038 | 125 | 1043 | 113 | 1041 | 229 | 127 | 1040 | 105 | 124 | 1084 | 73 | 15 | 1142 | 199 | 958 | 929 | 228 | 248 | 909 | 883 | 274 | 903 | 254 | 211 | 946 | 975 | 182 | 19669 |
| 55 | 1102 | 91 | 1066 | 126 | 1031 | 119 | 1032 | 114 | 1044 | 116 | 128 | 1030 | 117 | 1052 | 1033 | 93 | 1064 | 1140 | 17 | 999 | 158 | 206 | 951 | 911 | 246 | 27 | 881 | 253 | 904 | 93 | 226 | 188 | 969 | 19669 |
| 56 | 1101 | 1075 | 82 | 100 | 1092 | 1068 | 64 | 71 | 1071 | 72 | 63 | 1096 | 1087 | 76 | 1060 | 102 | 1077 | 1 | 1156 | 980 | 177 | 238 | 919 | 263 | 894 | 278 | 879 | 901 | 256 | 212 | 945 | 1010 | 147 | 19669 |
| 20 | 1137 | 84 | 1073 | 1057 | 65 | 89 | 1093 | 1086 | 86 | 1085 | 1094 | 61 | 70 | 1081 | 97 | 1055 | 80 | 1148 | 9 | 992 | 165 | 922 | 235 | 887 | 270 | 880 | 277 | 889 | 268 | 203 | 954 | 1001 | 156 | 19669 |
| 1127 | 30 | 36 | 40 | 41 | 1130 | 1129 | 1155 | 1115 | 48 | 1150 | 1141 | 1111 | 1106 | 22 | 29 | 11 | 1134 | 3 | 12 | 187 | 970 | 925 | 232 | 247 | 910 | 877 | 280 | 267 | 890 | 956 | 201 | 971 | 186 | 19669 |
| 1119 | 38 | 1121 | 1117 | 1116 | 27 | 28 | 2 | 42 | 1109 | 7 | 16 | 46 | 51 | 1135 | 1128 | 1146 | 23 | 1154 | 1145 | 144 | 1013 | 934 | 223 | 897 | 260 | 273 | 884 | 900 | 257 | 947 | 210 | 966 | 191 | 19669 |
| 470 | 687 | 455 | 703 | 428 | 713 | 684 | 716 | 446 | 475 | 476 | 440 | 707 | 699 | 561 | 595 | 94 | 593 | 562 | 566 | 968 | 189 | 942 | 215 | 252 | 885 | 908 | 269 | 245 | 912 | 216 | 94 | 162 | 995 | 19669 |
| 732 | 425 | 702 | 454 | 729 | 444 | 473 | 441 | 711 | 682 | 681 | 717 | 450 | 458 | 590 | 568 | 588 | 569 | 571 | 585 | 183 | 974 | 214 | 943 | 905 | 272 | 249 | 888 | 264 | 893 | 920 | 237 | 169 | 988 | 19669 |
| 478 | 679 | 498 | 659 | 652 | 34 | 668 | 497 | 507 | 511 | 655 | 504 | 456 | 701 | 584 | 583 | 575 | 576 | 580 | 573 | 150 | 1007 | 938 | 955 | 230 | 207 | 913 | 208 | 94 | 233 | 242 | 915 | 151 | 1006 | 19669 |
| 683 | 474 | 521 | 636 | 505 | 523 | 489 | 660 | 650 | 646 | 502 | 653 | 460 | 697 | 578 | 574 | 581 | 582 | 577 | 579 | 960 | 197 | 219 | 202 | 927 | 950 | 244 | 949 | 213 | 924 | 937 | 220 | 994 | 163 | 19669 |
| 452 | 705 | 656 | 501 | 551 | 606 | 615 | 531 | 622 | 546 | 520 | 637 | 461 | 696 | 567 | 586 | 570 | 587 | 589 | 572 | 965 | 978 | 984 | 1003 | 184 | 200 | 171 | 153 | 155 | 1000 | 141 | 1008 | 143 | 1014 | 19669 |
| 426 | 731 | 641 | 516 | 538 | 619 | 542 | 626 | 535 | 611 | 672 | 485 | 710 | 447 | 591 | 565 | 563 | 564 | 592 | 596 | 192 | 179 | 173 | 154 | 973 | 957 | 986 | 1004 | 1002 | 157 | 1016 | 149 | 152 | 1005 | 19669 |
| 718 | 439 | 514 | 643 | 627 | 530 | 602 | 555 | 618 | 539 | 648 | 509 | 431 | 726 | 330 | 872 | 338 | 858 | 312 | 286 | 823 | 32 | 339 | 859 | 840 | 852 | 327 | 284 | 828 | 323 | 290 | 820 | 825 | 332 | 19669 |
| 692 | 465 | 518 | 639 | 616 | 541 | 559 | 598 | 545 | 612 | 484 | 673 | 735 | 422 | 827 | 285 | 819 | 299 | 845 | 871 | 334 | 325 | 818 | 298 | 317 | 305 | 830 | 873 | 329 | 834 | 867 | 337 | 838 | 319 | 19669 |
| 479 | 678 | 649 | 508 | 528 | 629 | 597 | 560 | 623 | 534 | 491 | 666 | 695 | 462 | 315 | 842 | 358 | 381 | 796 | 781 | 374 | 378 | 789 | 346 | 379 | 782 | 785 | 794 | 802 | 354 | 798 | 359 | 844 | 313 | 19669 |
| 719 | 438 | 486 | 671 | 631 | 526 | 556 | 601 | 533 | 624 | 676 | 481 | 468 | 689 | 843 | 314 | 799 | 776 | 361 | 376 | 783 | 779 | 368 | 811 | 778 | 375 | 372 | 363 | 355 | 803 | 815 | 342 | 863 | 294 | 19669 |
| 700 | 457 | 519 | 638 | 543 | 614 | 558 | 599 | 609 | 548 | 492 | 665 | 730 | 427 | 288 | 869 | 792 | 365 | 411 | 398 | 747 | 756 | 388 | 771 | 387 | 767 | 403 | 757 | 392 | 765 | 370 | 787 | 324 | 833 | 19669 |
| 712 | 445 | 642 | 515 | 607 | 550 | 600 | 557 | 621 | 536 | 483 | 674 | 721 | 436 | 853 | 304 | 774 | 383 | 746 | 759 | 410 | 401 | 769 | 386 | 770 | 390 | 754 | 400 | 745 | 412 | 347 | 810 | 340 | 817 | 19669 |
| 467 | 690 | 645 | 512 | 527 | 630 | 553 | 604 | 547 | 610 | 651 | 506 | 691 | 466 | 824 | 333 | 808 | 349 | 755 | 402 | 737 | 419 | 743 | 416 | 418 | 740 | 413 | 742 | 768 | 389 | 773 | 384 | 311 | 846 | 19669 |
| 424 | 733 | 654 | 503 | 617 | 540 | 603 | 554 | 620 | 537 | 667 | 490 | 686 | 471 | 856 | 301 | 357 | 800 | 391 | 766 | 420 | 738 | 414 | 741 | 739 | 417 | 744 | 415 | 409 | 748 | 348 | 809 | 293 | 864 | 19669 |
| 688 | 469 | 662 | 495 | 532 | 605 | 628 | 549 | 525 | 632 | 496 | 661 | 442 | 715 | 306 | 851 | 367 | 790 | 762 | 395 | 758 | 405 | 763 | 393 | 761 | 749 | 407 | 760 | 385 | 404 | 804 | 353 | 295 | 862 | 19669 |
| 463 | 694 | 494 | 663 | 625 | 552 | 529 | 608 | 544 | 613 | 640 | 517 | 449 | 708 | 335 | 822 | 371 | 786 | 406 | 751 | 399 | 752 | 394 | 764 | 396 | 408 | 750 | 397 | 772 | 753 | 373 | 784 | 860 | 297 | 19669 |
| 430 | 727 | 658 | 675 | 510 | 487 | 633 | 488 | 664 | 513 | 522 | 635 | 709 | 448 | 336 | 821 | 795 | 362 | 380 | 812 | 788 | 344 | 351 | 791 | 352 | 343 | 816 | 807 | 356 | 780 | 382 | 797 | 281 | 876 | 19669 |
| 680 | 477 | 499 | 482 | 647 | 670 | 524 | 669 | 493 | 644 | 657 | 500 | 714 | 443 | 300 | 857 | 364 | 793 | 777 | 345 | 369 | 813 | 806 | 366 | 805 | 814 | 341 | 350 | 801 | 377 | 775 | 360 | 868 | 289 | 19669 |
| 685 | 698 | 704 | 723 | 464 | 480 | 451 | 433 | 435 | 720 | 421 | 728 | 423 | 734 | 847 | 310 | 316 | 320 | 321 | 850 | 849 | 875 | 835 | 328 | 870 | 861 | 831 | 826 | 302 | 309 | 291 | 854 | 283 | 292 | 19669 |
| 472 | 459 | 453 | 434 | 693 | 677 | 706 | 724 | 722 | 437 | 736 | 429 | 432 | 725 | 839 | 318 | 841 | 837 | 836 | 307 | 308 | 282 | 322 | 829 | 287 | 296 | 326 | 331 | 855 | 848 | 866 | 303 | 874 | 865 | 19669 |
| 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 |




| 170 |  |  |  |  | Inder J. Taneja |  |  |  |  | https://inderjtaneja.com/ |  |  |  |  |  | https://numbers-magic.com/ |  |  |  |  |  | @utaneja |  |  |  | $34 \times 34$ |  |  |  |  |  |  |  | $\left\lvert\, \frac{19669}{19669}\right.$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1113 | 1123 | 54 | 41 | 47 | 1108 | 46 | 53 | 1124 | 39 | 38 | 1106 | 42 | 60 | 35 | 1114 | 1102 | 56 | 1105 | 48 | 1099 | 1121 | 1112 | 1098 | 1140 | 17 | 1009 | 138 | 1003 | 144 | 1016 | 161 | 108 | 1049 |  |
| 34 | 44 | 1103 | 1116 | 1110 | 49 | 1111 | 1104 | 33 | 1118 | 1119 | 51 | 1115 | 1097 | 1122 | 43 | 55 | 1101 | 52 | 1109 | 58 | 36 | 45 | 59 | 1129 | 28 | 1019 | 148 | 154 | 1013 | 141 | 996 | 124 | 1033 | 19669 |
| 1107 | 50 | 69 | 73 | 72 | 1089 | 64 | 66 | 84 | 81 | 1077 | 1087 | 1078 | 1094 | 74 | 1080 | 1081 | 1086 | 65 | 1095 | 1079 | 83 | 1075 | 75 | 31 | 1126 | 158 | 999 | 173 | 992 | 171 | 978 | 130 | 1027 | 19669 |
| 40 | 1117 | 1096 | 103 | 93 | 1072 | 86 | 95 | 87 | 1056 | 98 | 104 | 91 | 1063 | 1067 | 89 | 1069 | 99 | 1055 | 1057 | 1060 | 1061 | 1065 | 61 | 1150 | 7 | 145 | 1012 | 177 | 208 | 949 | 980 | 1050 | 107 | 19669 |
| 1120 | 37 | 67 | 1054 | 1064 | 85 | 1071 | 1062 | 1070 | 101 | 1059 | 1053 | 1066 | 94 | 90 | 1068 | 88 | 1058 | 102 | 100 | 97 | 96 | 92 | 1090 | 1130 | 27 | 151 | 1006 | 176 | 195 | 962 | 981 | 113 | 1044 | 19669 |
| 57 | 1100 | 1082 | 1084 | 1085 | 68 | 1093 | 1091 | 1073 | 1076 | 80 | 70 | 79 | 63 | 1083 | 77 | 76 | 71 | 1092 | 62 | 78 | 1074 | 82 | 1088 | 8 | 1149 | 1004 | 153 | 985 | 968 | 189 | 172 | 1035 | 122 | 19669 |
| 4 | 20 | 26 | 1154 | 9 | 1139 | 1151 | 2 | 1136 | 32 | 15 | 1152 | 1146 | 14 | 1133 | 1138 | 16 | 1132 | 23 | 1128 | 22 | 12 | 1144 | 1156 | 10 | 1127 | 998 | 159 | 168 | 190 | 967 | 989 | 1028 | 129 | 19669 |
| 1153 | 1137 | 1131 | 3 | 1148 | 18 | 6 | 1155 | 21 | 1125 | 1142 | 5 | 11 | 1143 | 24 | 19 | 1141 | 25 | 1134 | 29 | 1135 | 1145 | 13 | 1 | 30 | 1147 | 139 | 1018 | 170 | 199 | 958 | 987 | 106 | 1051 | 19669 |
| 801 | 346 | 795 | 352 | 808 | 369 | 316 | 841 | 713 | 438 | 441 | 435 | 440 | 436 | 715 | 724 | 723 | 720 | 736 | 421 | 453 | 704 | 678 | 682 | 474 | 480 | 1020 | 137 | 188 | 191 | 966 | 969 | 1032 | 125 | 19669 |
| 811 | 356 | 362 | 805 | 349 | 788 | 332 | 825 | 719 | 444 | 716 | 722 | 717 | 721 | 442 | 433 | 434 | 437 | 422 | 735 | 468 | 689 | 479 | 475 | 677 | 683 | 143 | 1014 | 185 | 952 | 205 | 972 | 1048 | 109 | 19669 |
| 366 | 791 | 387 | 373 | 778 | 776 | 335 | 822 | 443 | 714 | 711 | 710 | 708 | 705 | 448 | 450 | 451 | 445 | 729 | 428 | 690 | 467 | 481 | 676 | 477 | 680 | 142 | 1015 | 973 | 202 | 955 | 184 | 119 | 1038 | 19669 |
| 353 | 804 | 385 | 415 | 742 | 772 | 842 | 315 | 439 | 718 | 446 | 447 | 449 | 452 | 709 | 707 | 706 | 712 | 423 | 734 | 691 | 466 | 672 | 485 | 476 | 681 | 1002 | 155 | 983 | 207 | 950 | 174 | 1047 | 110 | 19669 |
| 359 | 798 | 384 | 405 | 752 | 773 | 321 | 836 | 417 | 739 | 726 | 727 | 432 | 427 | 733 | 737 | 731 | 419 | 429 | 425 | 701 | 456 | 675 | 482 | 471 | 686 | 146 | 1011 | 974 | 197 | 960 | 183 | 1042 | 115 | 19669 |
| 796 | 361 | 777 | 753 | 404 | 380 | 827 | 330 | 740 | 418 | 431 | 430 | 725 | 730 | 424 | 420 | 426 | 738 | 732 | 728 | 463 | 694 | 486 | 671 | 472 | 685 | 164 | 993 | 990 | 959 | 198 | 167 | 118 | 1039 | 19669 |
| 358 | 799 | 376 | 398 | 759 | 781 | 820 | 337 | 605 | 611 | 551 | 547 | 525 | 632 | 566 | 590 | 563 | 596 | 564 | 592 | 697 | 460 | 484 | 673 | 679 | 478 | 157 | 1000 | 178 | 963 | 194 | 979 | 1029 | 128 | 19669 |
| 365 | 792 | 378 | 407 | 750 | 779 | 314 | 843 | 546 | 552 | 606 | 610 | 540 | 617 | 595 | 577 | 582 | 571 | 584 | 562 | 703 | 454 | 669 | 488 | 688 | 469 | 1010 | 147 | 976 | 193 | 964 | 181 | 1034 | 123 | 19669 |
| 812 | 345 | 396 | 399 | 758 | 761 | 824 | 333 | 549 | 608 | 558 | 599 | 618 | 539 | 589 | 572 | 583 | 578 | 581 | 568 | 695 | 462 | 487 | 670 | 687 | 470 | 150 | 1007 | 977 | 965 | 192 | 180 | 120 | 1037 | 19669 |
| 351 | 806 | 393 | 749 | 408 | 764 | 840 | 317 | 548 | 609 | 597 | 560 | 619 | 538 | 587 | 586 | 573 | 580 | 575 | 570 | 455 | 702 | 674 | 483 | 684 | 473 | 160 | 997 | 982 | 203 | 954 | 175 | 136 | 1021 | 19669 |
| 350 | 807 | 765 | 410 | 747 | 392 | 327 | 830 | 543 | 614 | 600 | 557 | 631 | 526 | 569 | 579 | 576 | 585 | 574 | 588 | 461 | 692 | 464 | 698 | 457 | 699 | 1001 | 156 | 169 | 951 | 206 | 988 | 127 | 1030 | 19669 |
| 794 | 363 | 775 | 416 | 741 | 382 | 839 | 318 | 544 | 613 | 603 | 554 | 535 | 622 | 565 | 567 | 594 | 561 | 593 | 591 | 465 | 696 | 693 | 459 | 700 | 458 | 152 | 1005 | 991 | 953 | 204 | 166 | 1024 | 133 | 19669 |
| 354 | 803 | 766 | 403 | 754 | 391 | 834 | 323 | 607 | 550 | 556 | 601 | 527 | 630 | 641 | 510 | 513 | 512 | 507 | 508 | 643 | 652 | 651 | 648 | 664 | 493 | 995 | 162 | 975 | 956 | 201 | 182 | 126 | 1031 | 19669 |
| 372 | 785 | 783 | 745 | 412 | 374 | 326 | 831 | 616 | 541 | 553 | 604 | 629 | 528 | 647 | 516 | 644 | 645 | 650 | 649 | 514 | 505 | 506 | 509 | 494 | 663 | 1017 | 140 | 187 | 957 | 200 | 970 | 116 | 1041 | 19669 |
| 347 | 810 | 386 | 755 | 402 | 771 | 344 | 813 | 615 | 542 | 559 | 598 | 623 | 534 | 515 | 642 | 522 | 633 | 636 | 639 | 638 | 517 | 523 | 520 | 657 | 500 | 1008 | 149 | 971 | 961 | 196 | 186 | 1040 | 117 | 19669 |
| 802 | 355 | 768 | 401 | 756 | 389 | 826 | 331 | 612 | 545 | 602 | 555 | 625 | 532 | 511 | 646 | 635 | 524 | 521 | 518 | 519 | 640 | 634 | 637 | 495 | 662 | 994 | 163 | 179 | 165 | 986 | 984 | 1052 | 105 | 19669 |
| 790 | 367 | 769 | 757 | 400 | 388 | 328 | 829 | 628 | 530 | 621 | 531 | 537 | 624 | 499 | 504 | 654 | 655 | 667 | 489 | 661 | 665 | 659 | 491 | 501 | 497 | 1036 | 1025 | 135 | 1046 | 1026 | 112 | 114 | 134 | 19669 |
| 368 | 789 | 774 | 411 | 746 | 383 | 821 | 336 | 529 | 627 | 536 | 626 | 533 | 620 | 658 | 653 | 503 | 502 | 490 | 668 | 496 | 492 | 498 | 666 | 660 | 656 | 121 | 132 | 1022 | 111 | 131 | 1045 | 1023 | 1043 | 19669 |
| 793 | 364 | 377 | 743 | 414 | 780 | 338 | 819 | 212 | 228 | 234 | 946 | 231 | 931 | 924 | 210 | 928 | 944 | 223 | 943 | 938 | 222 | 925 | 930 | 224 | 240 | 217 | 948 | 230 | 220 | 936 | 920 | 218 | 919 | 19669 |
| 360 | 797 | 767 | 748 | 409 | 390 | 816 | 341 | 945 | 929 | 923 | 211 | 926 | 226 | 233 | 947 | 229 | 213 | 934 | 214 | 219 | 935 | 232 | 227 | 933 | 917 | 940 | 209 | 927 | 937 | 221 | 237 | 238 | 939 | 19669 |
| 787 | 370 | 782 | 751 | 406 | 375 | 334 | 823 | 899 | 258 | 277 | 281 | 280 | 881 | 272 | 274 | 292 | 289 | 869 | 879 | 870 | 886 | 282 | 872 | 873 | 878 | 273 | 887 | 871 | 291 | 867 | 283 | 239 | 918 | 19669 |
| 809 | 348 | 395 | 760 | 397 | 762 | 324 | 833 | 248 | 909 | 888 | 311 | 301 | 364 | 294 | 303 | 295 | 853 | 306 | 312 | 299 | 855 | 859 | 297 | 857 | 307 | 847 | 849 | 852 | 848 | 861 | 269 | 942 | 215 | 19669 |
| 800 | 357 | 763 | 744 | 413 | 394 | 832 | 325 | 912 | 245 | 275 | 846 | 856 | 293 | 863 | 854 | 862 | 304 | 851 | 845 | 858 | 302 | 298 | 860 | 300 | 850 | 310 | 308 | 305 | 309 | 296 | 882 | 922 | 235 | 19669 |
| 786 | 371 | 381 | 784 | 379 | 770 | 844 | 313 | 265 | 892 | 874 | 876 | 877 | 276 | 885 | 883 | 865 | 868 | 288 | 278 | 287 | 271 | 875 | 285 | 284 | 279 | 884 | 270 | 286 | 866 | 290 | 880 | 216 | 941 | 19669 |
| 828 | 817 | 343 | 838 | 818 | 320 | 322 | 342 | 905 | 915 | 262 | 249 | 255 | 900 | 254 | 261 | 916 | 247 | 246 | 898 | 250 | 268 | 243 | 906 | 894 | 264 | 897 | 256 | 891 | 913 | 904 | 890 | 932 | 225 | 19669 |
| 329 | 340 | 814 | 319 | 339 | 837 | 815 | 835 | 242 | 252 | 895 | 908 | 902 | 257 | 903 | 896 | 241 | 910 | 911 | 259 | 907 | 889 | 914 | 251 | 263 | 893 | 260 | 901 | 266 | 244 | 253 | 267 | 921 | 236 | 19669 |
| 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 |



In this case, we don't have double digits magic rectangles of order $4 \times 30$. More examples of similar kind are given in pdf file in author's site https://shorturl.at/ckptR.

### 3.3 Magic Squares of Order 34 with Cornered Magic Rectangles

We have written in three different styles magic squares of order 34 using 4 equal sums cornered magic rectangles. These are centered in magic squares of order $6,10,14,18,22$ and 26.

### 3.3.1 First Type

Below are examples of magic squares of order 34 centered in magic squares of order $6,10,14,18,22$ and 26 respectively. These are constructed with four equal sums cornered magic rectangles of orders $14 \times 20,12 \times 22,10 \times 24,8 \times 26,6 \times 28$ and $4 \times 30$ respectively.







### 3.3.2 Second Type

Below are examples of magic squares of order 34 centered in magic squares of order $6,10,14,18,22$ and 26 respectively. These are constructed with four equal sums cornered magic rectangles of orders $14 \times 20,12 \times 22,10 \times 24,8 \times 26$ and $6 \times 28$ respectively.




| 257 |  |  |  |  |  |  | J. T | neja |  |  | https: | derj | neja.c |  |  |  | s:// | ber | magic.c | om/ |  |  | IJTANE |  |  | 34, |  |  |  |  |  |  |  | 19669 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 25 | 1132 | 1107 | 50 | 1088 | 69 | 1057 | 89 | 95 | 1066 | 102 | 1067 | 87 | 1072 | 1053 | 1071 | 101 | 88 | 1059 | 1061 | 93 | 97 | 99 | 94 | 1054 | 1065 | 1050 | 1026 | 120 | 132 | 14 | 1027 | 1040 | 119 | 19669 |
| 1125 | 32 | 53 | 1104 | 1074 | 83 | 100 | 1068 | 1062 | 91 | 1055 | 90 | 1070 | 85 | 104 | 86 | 1056 | 1069 | 98 | 96 | 1064 | 1060 | 1058 | 1063 | 103 | 92 | 131 | 107 | 1037 | 1025 | 1043 | 130 | 117 | 1038 | 19669 |
| 1141 | 16 | 1106 | 51 | 68 | 1073 | 1081 | 78 | 1084 | 1085 | 75 | 1094 | 79 | 80 | 1080 | 66 | 1075 | 71 | 64 | 1083 | 62 | 1096 | 81 | 1090 | 70 | 1092 | 1036 | 121 | 158 | 1017 | 138 | 137 | 1011 | 1010 | 19669 |
| 1145 | 12 | 40 | 1117 | 84 | 1089 | 76 | 1079 | 73 | 72 | 1082 | 63 | 1078 | 1077 | 77 | 1091 | 82 | 1086 | 1093 | 74 | 1095 | 61 | 1076 | 67 | 1087 | 65 | 1042 | 115 | 140 | 999 | 1019 | 1020 | 146 | 147 | 19669 |
| 28 | 1129 | 45 | 37 | 1115 | 1102 | 1114 | 54 | 1098 | 1121 | 34 | 1124 | 1113 | 52 | 1119 | 60 | 48 | 57 | 35 | 46 | 1101 | 1108 | 1099 | 39 | 1116 | 47 | 111 | 1046 | 143 | 1014 | 176 | 174 | 72 | 992 | 19669 |
| 3 | 1154 | 1120 | 1112 | 42 | 55 | 43 | 1103 | 59 | 36 | 1123 | 33 | 44 | 1105 | 38 | 1097 | 1109 | 1100 | 1122 | 1111 | 56 | 49 | 58 | 1118 | 41 | 1110 | 135 | 1022 | 161 | 996 | 983 | 981 | 185 | 165 | 19669 |
| 1135 | 1131 | 6 | 15 | 23 | 29 | 1152 | 1130 | 2 | 24 | 1140 | 19 | 1144 | 1126 | 1156 | 4 | 10 | 14 | 30 | 21 | 1139 | 1137 | 9 | 1150 | 1146 | 1149 | 108 | 1049 | 145 | 1012 | 990 | 167 | 193 | 964 | 19669 |
| 26 | 22 | 1151 | 1142 | 1134 | 1128 | 5 | 27 | 1155 | 1133 | 17 | 1138 | 13 | 31 | 1 | 1153 | 1147 | 1143 | 1127 | 1136 | 18 | 20 | 1148 | 7 | 11 | 8 | 110 | 1047 | 1015 | 142 | 971 | 186 | 200 | 957 | 19669 |
| 412 | 745 | 768 | 389 | 349 | 808 | 833 | 324 | 420 | 737 | 434 | 723 | 445 | 711 | 705 | 708 | 448 | 451 | 710 | 450 | 453 | 690 | 697 | 703 | 465 | 463 | 1051 | 106 | 149 | 1008 | 187 | 970 | 968 | 189 | 19669 |
| 402 | 755 | 387 | 770 | 350 | 807 | 837 | 320 | 726 | 431 | 444 | 713 | 712 | 446 | 452 | 449 | 709 | 706 | 447 | 707 | 467 | 704 | 460 | 454 | 692 | 694 | 116 | 1041 | 1006 | 151 | 170 | 987 | 206 | 951 | 19669 |
| 414 | 743 | 373 | 784 | 791 | 366 | 340 | 817 | 738 | 419 | 719 | 440 | 442 | 714 | 716 | 435 | 436 | 724 | 439 | 720 | 456 | 701 | 476 | 683 | 677 | 478 | 1052 | 105 | 997 | 160 | 974 | 183 | 950 | 207 | 19669 |
| 742 | 415 | 393 | 764 | 803 | 354 | 336 | 821 | 735 | 422 | 717 | 438 | 715 | 443 | 441 | 722 | 721 | 433 | 718 | 437 | 699 | 458 | 474 | 681 | 480 | 679 | 1045 | 112 | 159 | 998 | 976 | 181 | 966 | 191 | 19669 |
| 406 | 751 | 781 | 376 | 790 | 367 | 338 | 819 | 423 | 728 | 426 | 739 | 732 | 428 | 432 | 424 | 727 | 736 | 730 | 417 | 691 | 466 | 678 | 479 | 484 | 673 | 125 | 1032 | 1000 | 157 | 179 | 978 | 203 | 954 | 19669 |
| 408 | 749 | 382 | 775 | 798 | 359 | 834 | 323 | 429 | 734 | 731 | 418 | 425 | 729 | 725 | 733 | 430 | 421 | 427 | 740 | 693 | 464 | 470 | 687 | 487 | 670 | 1024 | 133 | 155 | 1002 | 985 | 172 | 198 | 959 | 19669 |
| 757 | 400 | 375 | 782 | 809 | 348 | 319 | 838 | 599 | 558 | 550 | 607 | 532 | 625 | 561 | 595 | 594 | 593 | 562 | 566 | 696 | 461 | 688 | 469 | 669 | 488 | 1021 | 136 | 164 | 993 | 168 | 989 | 204 | 953 | 19669 |
| 405 | 752 | 383 | 774 | 361 | 796 | 827 | 330 | 560 | 597 | 612 | 545 | 627 | 530 | 590 | 568 | 88 | 569 | 571 | 585 | 462 | 695 | 473 | 684 | 485 | 672 | 1034 | 123 | 995 | 162 | 171 | 986 | 961 | 196 | 19669 |
| 401 | 756 | 776 | 381 | 353 | 804 | 333 | 824 | 598 | 559 | 541 | 616 | 623 | 534 | 584 | 583 | 575 | 576 | 580 | 573 | 698 | 459 | 685 | 472 | 676 | 481 | 109 | 1048 | 1018 | 139 | 184 | 973 | 949 | 208 | 19669 |
| 753 | 404 | 780 | 377 | 792 | 365 | 829 | 328 | 557 | 600 | 551 | 606 | 621 | 536 | 578 | 574 | 581 | 582 | 577 | 579 | 457 | 700 | 686 | 471 | 674 | 483 | 126 | 1031 | 1007 | 150 | 980 | 177 | 958 | 199 | 19669 |
| 397 | 760 | 783 | 374 | 362 | 795 | 830 | 327 | 554 | 603 | 548 | 609 | 540 | 617 | 567 | 586 | 570 | 587 | 589 | 572 | 702 | 455 | 475 | 682 | 671 | 486 | 124 | 1033 | 1003 | 154 | 991 | 166 | 965 | 192 | 19669 |
| 741 | 416 | 773 | 384 | 368 | 789 | 835 | 322 | 601 | 556 | 546 | 611 | 620 | 537 | 591 | 565 | 563 | 564 | 592 | 596 | 468 | 689 | 680 | 477 | 482 | 675 | 1029 | 128 | 144 | 1013 | 173 | 984 | 202 | 955 | 19669 |
| 750 | 407 | 763 | 394 | 794 | 363 | 813 | 344 | 555 | 602 | 614 | 543 | 622 | 535 | 666 | 667 | 656 | 493 | 668 | 494 | 496 | 495 | 654 | 504 | 657 | 492 | 1044 | 113 | 1009 | 148 | 988 | 169 | 952 | 205 | 19669 |
| 759 | 398 | 772 | 385 | 802 | 355 | 318 | 839 | 604 | 553 | 605 | 552 | 632 | 525 | 491 | 490 | 501 | 664 | 489 | 663 | 661 | 662 | 503 | 653 | 665 | 500 | 127 | 1030 | 1016 | 141 | 182 | 975 | 956 | 201 | 19669 |
| 744 | 413 | 395 | 762 | 356 | 801 | 332 | 825 | 613 | 542 | 610 | 549 | 526 | 631 | 514 | 650 | 505 | 513 | 649 | 651 | 642 | 641 | 511 | 509 | 655 | 502 | 118 | 1039 | 1001 | 156 | 977 | 180 | 195 | 962 | 19669 |
| 411 | 746 | 378 | 779 | 797 | 360 | 321 | 836 | 544 | 615 | 608 | 547 | 539 | 618 | 643 | 507 | 652 | 644 | 508 | 506 | 515 | 516 | 648 | 646 | 497 | 660 | 122 | 1035 | 994 | 163 | 969 | 188 | 960 | 197 | 19669 |
| 758 | 399 | 766 | 391 | 788 | 369 | 313 | 844 | 629 | 619 | 531 | 529 | 533 | 630 | 635 | 518 | 638 | 520 | 633 | 521 | 640 | 523 | 645 | 512 | 499 | 658 | 1023 | 134 | 152 | 1005 | 178 | 979 | 194 | 963 | 19669 |
| 409 | 748 | 769 | 388 | 357 | 800 | 826 | 331 | 528 | 538 | 626 | 628 | 527 | 624 | 522 | 639 | 519 | 637 | 524 | 636 | 517 | 634 | 510 | 647 | 498 | 659 | 1028 | 129 | 153 | 1004 | 175 | 982 | 190 | 967 | 19669 |
| 754 | 403 | 379 | 778 | 812 | 345 | 337 | 820 | 917 | 226 | 938 | 941 | 939 | 227 | 919 | 231 | 944 | 232 | 946 | 222 | 228 | 936 | 934 | 224 | 920 | 927 | 239 | 217 | 215 | 214 | 921 | 922 | 233 | 229 | 19669 |
| 747 | 410 | 765 | 392 | 811 | 346 | 831 | 326 | 240 | 931 | 219 | 216 | 218 | 930 | 238 | 926 | 213 | 925 | 211 | 935 | 929 | 221 | 223 | 933 | 237 | 230 | 918 | 940 | 942 | 943 | 236 | 235 | 928 | 924 | 19669 |
| 771 | 380 | 396 | 767 | 372 | 785 | 832 | 325 | 912 | 254 | 251 | 889 | 914 | 910 | 263 | 913 | 252 | 259 | 267 | 895 | 253 | 891 | 246 | 899 | 255 | 249 | 265 | 900 | 907 | 242 | 897 | 901 | 932 | 225 | 19669 |
| 386 | 777 | 390 | 761 | 351 | 806 | 339 | 818 | 245 | 903 | 906 | 268 | 243 | 247 | 894 | 244 | 905 | 898 | 890 | 262 | 904 | 266 | 911 | 258 | 902 | 908 | 892 | 257 | 250 | 915 | 256 | 260 | 209 | 948 | 19669 |
| 787 | 358 | 352 | 793 | 371 | 810 | 843 | 314 | 883 | 876 | 877 | 272 | 287 | 285 | 865 | 288 | 873 | 880 | 275 | 270 | 271 | 881 | 286 | 875 | 278 | 867 | 289 | 291 | 874 | 884 | 916 | 241 | 210 | 947 | 19669 |
| 370 | 799 | 805 | 364 | 347 | 786 | 316 | 841 | 274 | 281 | 280 | 885 | 870 | 872 | 292 | 869 | 284 | 277 | 882 | 887 | 886 | 276 | 871 | 282 | 879 | 290 | 868 | 866 | 273 | 283 | 893 | 264 | 937 | 220 | 19669 |
| 341 | 329 | 840 | 823 | 815 | 822 | 315 | 343 | 847 | 863 | 853 | 849 | 860 | 295 | 311 | 861 | 848 | 850 | 858 | 302 | 298 | 305 | 293 | 312 | 306 | 300 | 856 | 303 | 888 | 269 | 248 | 909 | 234 | 923 | 19669 |
| 816 | 828 | 317 | 334 | 342 | 335 | 814 | 842 | 310 | 294 | 304 | 308 | 297 | 862 | 846 | 296 | 309 | 307 | 299 | 855 | 859 | 852 | 864 | 845 | 851 | 857 | 301 | 854 | 279 | 878 | 261 | 896 | 945 | 212 | 19669 |
| 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 |


| 494 |  |  |  |  |  |  | J. | neja |  |  | https: | der | eja.com |  |  |  | tps:/ | umbers-m | magic.co | om/ |  |  | IJTANE |  |  | $34 \times$ | x 34 |  |  |  |  |  |  | 19669 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1149 | 8 | 48 | 1109 | 1088 | 1076 | 1073 | 73 | 1078 | 78 | 80 | 1092 | 1096 | 1086 | 76 | 64 | 1074 | 70 | 67 | 74 | 66 | 68 | 082 | 72 | 1080 | 82 | 1095 | 1094 | 86 | 108 | 1061 | 91 | 1057 | 1068 | 19669 |
| 29 | 1128 | 40 | 1117 | 69 | 81 | 84 | 1084 | 79 | 1079 | 1077 | 65 | 61 | 71 | 1081 | 1093 | 83 | 1087 | 1090 | 1083 | 1091 | 1089 | 75 | 1085 | 77 | 1075 | 62 | 63 | 1049 | 1071 | 96 | 1066 | 100 | 89 | 9669 |
| 19 | 1138 | 1114 | 45 | 1098 | 1107 | 41 | 57 | 47 | 56 | 60 | 36 | 35 | 55 | 1111 | 1108 | 1103 | 1099 | 1115 | 1120 | 52 | 1104 | 39 | 1123 | 1113 | 51 | 1119 | 33 | 116 | 1041 | 130 | 1025 | 1023 | 136 | 669 |
| 1127 | 30 | 1112 | 43 | 59 | 50 | 1116 | 1100 | 1110 | 1101 | 1097 | 1121 | 1122 | 1102 | 46 | 49 | 54 | 58 | 42 | 37 | 1105 | 53 | 1118 | 34 | 44 | 1106 | 38 | 1124 | 90 | 1067 | 132 | 1027 | 134 | 1021 | 9669 |
| 12 | 22 | 1131 | 11 | 17 | 1151 | 1125 | 1130 | 16 | 1142 | 25 | 1156 | 1129 | 3 | 18 | 4 | 10 | 1148 | 5 | 1150 | 24 | 23 | 1144 | 1143 | 31 | 1136 | 1155 | 1137 | 1064 | 93 | 1039 | 118 | 153 | 1004 | 19669 |
| 1135 | 1145 | 26 | 1146 | 1140 | 6 | 32 | 27 | 1141 | 15 | 1132 | 1 | 28 | 1154 | 1139 | 1153 | 1147 | 9 | 1152 | 7 | 1133 | 1134 | 13 | 14 | 1126 | 21 | 2 | 20 | 1047 | 110 | 1019 | 138 | 1011 | 146 | 19669 |
| 828 | 329 | 862 | 295 | 257 | 900 | 337 | 820 | 364 | 793 | 774 | 383 | 392 | 387 | 390 | 771 | 769 | 766 | 768 | 385 | 404 | 747 | 755 | 406 | 749 | 412 | 394 | 761 | 115 | 1042 | 124 | 1033 | 1008 | 149 | 19669 |
| 832 | 325 | 847 | 310 | 265 | 892 | 814 | 343 | 786 | 371 | 375 | 782 | 765 | 770 | 767 | 386 | 388 | 391 | 389 | 772 | 410 | 753 | 402 | 751 | 408 | 745 | 763 | 396 | 114 | 1043 | 127 | 1030 | 994 | 163 | 19669 |
| 839 | 318 | 866 | 291 | 266 | 891 | 813 | 344 | 360 | 797 | 784 | 776 | 374 | 379 | 781 | 377 | 75 | 777 | 84 | 378 | 03 | 754 | 735 | 737 | 416 | 423 | 417 | 743 | 1050 | 107 | 1024 | 133 | 148 | 1009 | 19669 |
| 316 | 841 | 846 | 311 | 875 | 282 | 345 | 812 | 794 | 363 | 381 | 373 | 783 | 778 | 376 | 780 | 382 | 380 | 773 | 779 | 398 | 759 | 420 | 422 | 741 | 734 | 740 | 414 | 1055 | 102 | 1031 | 126 | 990 | 167 | 19669 |
| 825 | 332 | 298 | 859 | 895 | 262 | 808 | 349 | 795 | 785 | 357 | 370 | 368 | 788 | 365 | 361 | 798 | 790 | 66 | 799 | 760 | 397 | 729 | 428 | 436 | 725 | 719 | 434 | 1054 | 103 | 140 | 1017 | 16 | 993 | 19669 |
| 334 | 823 | 855 | 302 | 903 | 254 | 340 | 817 | 372 | 362 | 800 | 787 | 789 | 369 | 792 | 796 | 359 | 367 | 791 | 358 | 746 | 411 | 424 | 733 | 432 | 721 | 438 | 723 | 1058 | 99 | 117 | 1040 | 160 | 997 | 19669 |
| 837 | 320 | 863 | 294 | 883 | 274 | 816 | 802 | 356 | 347 | 807 | 42 | 806 | 346 | 805 | 388 | 353 | 809 | 18 | 354 | 393 | 764 | 421 | 736 | 720 | 437 | 711 | 446 | 95 | 1062 | 1032 | 125 | 99 | 162 | 19669 |
| 831 | 326 | 309 | 848 | 901 | 256 | 355 | 341 | 801 | 810 | 350 | 815 | 351 | 811 | 352 | 819 | 804 | 348 | 339 | 803 | 757 | 400 | 427 | 730 | 435 | 722 | 710 | 447 | 1059 | 98 | 1026 | 131 | 168 | 989 | 19669 |
| 331 | 826 | 869 | 288 | 272 | 885 | 597 | 560 | 607 | 50 | 618 | 539 | 639 | 518 | 561 | 595 | 594 | 593 | 562 | 566 | 752 | 405 | 418 | 739 | 439 | 718 | 448 | 709 | 105 | 1052 | 1034 | 123 | 151 | 1006 | 19669 |
| 836 | 321 | 851 | 306 | 260 | 897 | 556 | 601 | 615 | 42 | 526 | 631 | 20 | 637 | 590 | 568 | 588 | 569 | 571 | 585 | 762 | 395 | 742 | 415 | 726 | 431 | 44 | 713 | 109 | 1048 | 143 | 1014 | 996 | 161 | 19669 |
| 313 | 844 | 307 | 850 | 259 | 898 | 603 | 554 | 613 | 544 | 617 | 540 | 507 | 650 | 584 | 583 | 575 | 576 | 580 | 573 | 407 | 750 | 419 | 738 | 724 | 433 | 714 | 443 | 1070 | 87 | 119 | 1038 | 1010 | 147 | 19669 |
| 323 | 834 | 861 | 296 | 899 | 258 | 558 | 599 | 543 | 614 | 536 | 621 | 517 | 640 | 578 | 574 | 581 | 582 | 577 | 579 | 758 | 399 | 732 | 425 | 727 | 430 | 441 | 716 | 1053 | 104 | 137 | 1020 | 157 | 1000 | 19669 |
| 829 | 328 | 301 | 856 | 261 | 896 | 555 | 602 | 551 | 606 | 532 | 625 | 651 | 506 | 567 | 586 | 570 | 587 | 589 | 572 | 40 | 756 | 74 | 413 | 429 | 728 | 445 | 712 | 92 | 1065 | 1016 | 141 | 156 | 1001 | 19669 |
| 317 | 840 | 872 | 285 | 280 | 877 | 598 | 559 | 541 | 616 | 533 | 624 | 514 | 643 | 591 | 565 | 563 | 564 | 592 | 596 | 748 | 409 | 731 | 426 | 717 | 440 | 715 | 442 | 94 | 1063 | 120 | 1037 | 166 | 991 | 19669 |
| 843 | 314 | 849 | 308 | 264 | 893 | 557 | 600 | 610 | 547 | 623 | 534 | 646 | 511 | 704 | 451 | 707 | 449 | 462 | 700 | 694 | 468 | 692 | 460 | 702 | 690 | 456 | 464 | 1045 | 112 | 1029 | 128 | 1002 | 155 | 19669 |
| 322 | 835 | 858 | 299 | 873 | 284 | 604 | 553 | 611 | 546 | 630 | 527 | 523 | 634 | 453 | 706 | 450 | 708 | 695 | 457 | 463 | 689 | 465 | 697 | 455 | 467 | 693 | 701 | 1072 | 85 | 122 | 1035 | 152 | 1005 | 19669 |
| 333 | 824 | 300 | 857 | 902 | 255 | 605 | 548 | 549 | 612 | 627 | 530 | 510 | 647 | 679 | 471 | 476 | 483 | 677 | 475 | 687 | 484 | 469 | 68 | 678 | 680 | 454 | 703 | 106 | 1051 | 139 | 1018 | 158 | 999 | 19669 |
| 335 | 822 | 293 | 864 | 273 | 884 | 552 | 609 | 545 | 608 | 535 | 622 | 635 | 522 | 478 | 686 | 681 | 674 | 480 | 682 | 470 | 673 | 688 | 474 | 477 | 479 | 696 | 461 | 88 | 1069 | 1036 | 121 | 145 | 1012 | 19669 |
| 319 | 838 | 287 | 870 | 904 | 253 | 525 | 538 | 629 | 531 | 628 | 620 | 515 | 642 | 493 | 671 | 672 | 665 | 494 | 662 | 487 | 661 | 491 | 489 | 685 | 472 | 705 | 452 | 113 | 1044 | 1028 | 129 | 992 | 165 | 19669 |
| 842 | 315 | 304 | 853 | 275 | 882 | 632 | 619 | 528 | 626 | 537 | 529 | 644 | 513 | 664 | 486 | 485 | 492 | 663 | 495 | 670 | 496 | 668 | 666 | 473 | 684 | 466 | 691 | 1056 | 101 | 142 | 1015 | 1007 | 150 | 19669 |
| 827 | 330 | 312 | 845 | 269 | 888 | 636 | 516 | 508 | 652 | 509 | 638 | 645 | 524 | 659 | 658 | 497 | 653 | 656 | 502 | 503 | 500 | 488 | 669 | 676 | 481 | 699 | 458 | 1046 | 111 | 1013 | 144 | 1003 | 154 | 19669 |
| 327 | 830 | 290 | 867 | 276 | 881 | 521 | 641 | 649 | 505 | 648 | 519 | 633 | 512 | 498 | 499 | 660 | 504 | 501 | 655 | 654 | 657 | 667 | 490 | 482 | 675 | 459 | 698 | 97 | 1060 | 1022 | 135 | 998 | 159 | 19669 |
| 324 | 833 | 852 | 305 | 879 | 278 | 200 | 174 | 971 | 199 | 963 | 198 | 966 | 980 | 970 | 974 | 179 | 975 | 189 | 193 | 986 | 969 | 176 | 178 | 961 | 988 | 190 | 972 | 197 | 172 | 962 | 18 | 170 | 965 | 19669 |
| 821 | 336 | 289 | 868 | 277 | 880 | 957 | 983 | 186 | 958 | 194 | 959 | 191 | 177 | 187 | 183 | 978 | 182 | 968 | 964 | 171 | 188 | 981 | 979 | 196 | 169 | 967 | 185 | 960 | 985 | 195 | 976 | 192 | 987 | 19669 |
| 286 | 865 | 303 | 860 | 876 | 281 | 955 | 935 | 211 | 208 | 940 | 947 | 224 | 201 | 948 | 942 | 950 | 227 | 203 | 221 | 932 | 204 | 945 | 206 | 223 | 952 | 944 | 226 | 929 | 938 | 214 | 216 | 977 | 180 | 19669 |
| 871 | 292 | 297 | 854 | 874 | 283 | 202 | 222 | 946 | 949 | 217 | 210 | 933 | 956 | 209 | 215 | 207 | 930 | 954 | 936 | 225 | 953 | 212 | 951 | 934 | 205 | 213 | 931 | 228 | 219 | 941 | 943 | 175 | 982 | 19669 |
| 270 | 878 | 268 | 890 | 894 | 271 | 924 | 927 | 237 | 910 | 232 | 906 | 248 | 244 | 911 | 252 | 235 | 912 | 926 | 241 | 240 | 250 | 918 | 236 | 242 | 229 | 908 | 923 | 919 | 914 | 939 | 218 | 973 | 184 | 19669 |
| 887 | 279 | 889 | 267 | 886 | 263 | 233 | 230 | 920 | 247 | 925 | 251 | 909 | 913 | 246 | 905 | 922 | 245 | 231 | 916 | 917 | 907 | 239 | 921 | 915 | 928 | 249 | 234 | 238 | 243 | 220 | 937 | 984 | 173 | 19669 |
| 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 1966 |

### 3.3.3 Third Type

Below are examples of magic squares of order 34 centered in magic squares of order $6,10,14,18,22$ and 26 respectively. These are constructed with four equal sums cornered magic rectangles of orders $14 \times 20,12 \times 22,10 \times 24,8 \times 26$ and $6 \times 28$ respectively.

| 20 |  |  |  |  | Inder J. Taneja |  |  |  |  | https://inderjtaneja.com/ |  |  |  |  | https://numbers-magic.com/ |  |  |  |  |  | @IJTANEJA |  |  |  | 34×34 |  |  |  |  |  |  |  |  | 19669 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 19 | 32 | 21 | 1151 | 13 | 1153 | 1127 | 15 | 1126 | 1128 | 1 | 10 | 20 | 1149 | 1131 | 1129 | 1155 | 1152 | 24 | 14 | 275 | 882 | 269 | 888 | 254 | 903 | 927 | 230 | 220 | 937 | 183 | 974 | 1016 | 141 | 19669 |
| 1138 | 1125 | 1136 | 6 | 1144 | 4 | 30 | 1142 | 31 | 29 | 1156 | 1147 | 1137 | 8 | 26 | 28 | 2 | 5 | 1143 | 1133 | 278 | 879 | 886 | 271 | 252 | 905 | 924 | 233 | 215 | 942 | 983 | 174 | 987 | 170 | 19669 |
| 56 | 44 | 1109 | 35 | 1107 | 1118 | 1102 | 1115 | 46 | 51 | 37 | 1099 | 47 | 1114 | 57 | 1103 | 1121 | 52 | 27 | 1130 | 276 | 881 | 270 | 887 | 253 | 904 | 913 | 244 | 939 | 218 | 98 | 176 | 150 | 1007 | 19669 |
| 1101 | 1113 | 48 | 1122 | 50 | 39 | 55 | 42 | 1111 | 1106 | 1120 | 58 | 1110 | 43 | 1100 | 54 | 1105 | 36 | 9 | 1148 | 884 | 273 | 892 | 265 | 907 | 250 | 932 | 225 | 21 | 943 | 175 | 982 | 1004 | 153 | 19669 |
| 69 | 1094 | 1078 | 1080 | 1083 | 61 | 84 | 62 | 72 | 1092 | 1084 | 1076 | 76 | 1087 | 75 | 83 | 53 | 1104 | 1150 | 7 | 877 | 280 | 889 | 268 | 256 | 901 | 237 | 920 | 223 | 934 | 179 | 978 | 16 | 996 | 19669 |
| 1088 | 63 | 79 | 77 | 74 | 1096 | 1073 | 1095 | 1085 | 65 | 73 | 81 | 1081 | 70 | 1074 | 1082 | 1098 | 59 | 1139 | 18 | 883 | 274 | 890 | 267 | 899 | 258 | 919 | 238 | 207 | 950 | 178 | 979 | 164 | 993 | 19669 |
| 1059 | 1062 | 104 | 90 | 87 | 88 | 1071 | 1066 | 1058 | 1068 | 85 | 96 | 101 | 1064 | 64 | 1093 | 49 | 1108 | 16 | 1141 | 277 | 880 | 272 | 885 | 257 | 900 | 227 | 930 | 948 | 209 | 182 | 975 | 1000 | 157 | 19669 |
| 98 | 95 | 1053 | 1067 | 1070 | 1069 | 86 | 91 | 99 | 89 | 1072 | 1061 | 93 | 1056 | 1089 | 68 | 34 | 1123 | 1146 | 11 | 878 | 279 | 891 | 266 | 908 | 249 | 916 | 241 | 217 | 940 | 190 | 967 | 1014 | 143 | 19669 |
| 117 | 1050 | 112 | 120 | 1043 | 106 | 044 | 1038 | 108 | 1041 | 1052 | 111 | 057 | 100 | 90 | 67 | 60 | 1097 | 1140 | 17 | 261 | 894 | 264 | 895 | 251 | 906 | 928 | 229 | 936 | 221 | 97 | 186 | 156 | 1001 | 19669 |
| 1040 | 107 | 1045 | 1037 | 114 | 1051 | 113 | 119 | 1049 | 116 | 1046 | 105 | 060 | 97 | 1086 | 71 | 41 | 1116 | 1135 | 22 | 896 | 263 | 262 | 893 | 897 | 260 | 236 | 921 | 94 | 213 | 198 | 959 | 145 | 1012 | 19669 |
| 1026 | 123 | 1036 | 1025 | 1032 | 124 | 1035 | 126 | 128 | 130 | 115 | 1042 | 1065 | 92 | 1079 | 78 | 33 | 1124 | 12 | 1145 | 246 | 245 | 909 | 902 | 910 | 259 | 242 | 915 | 941 | 216 | 181 | 976 | 1009 | 148 | 19669 |
| 131 | 1034 | 121 | 132 | 125 | 1033 | 122 | 1031 | 1027 | 1029 | 109 | 1048 | 103 | 1054 | 80 | 1077 | 1119 | 38 | 1132 | 25 | 911 | 912 | 248 | 255 | 898 | 247 | 226 | 931 | 210 | 947 | 965 | 192 | 149 | 1008 | 19669 |
| 140 | 1022 | 1018 | 133 | 136 | 137 | 1019 | 1023 | 1030 | 127 | 1039 | 118 | 94 | 1063 | 82 | 1075 | 1117 | 40 | 3 | 1154 | 926 | 228 | 922 | 914 | 239 | 234 | 240 | 925 | 204 | 953 | 969 | 188 | 165 | 992 | 19669 |
| 1017 | 135 | 139 | 1024 | 1021 | 1020 | 138 | 134 | 129 | 1028 | 110 | 1047 | 1055 | 102 | 66 | 1091 | 1112 | 45 | 23 | 1134 | 231 | 929 | 235 | 243 | 918 | 923 | 232 | 917 | 938 | 219 | 962 | 195 | 147 | 1010 | 19669 |
| 706 | 449 | 432 | 731 | 450 | 723 | 735 | 714 | 442 | 722 | 433 | 709 | 425 | 428 | 566 | 590 | 563 | 596 | 564 | 592 | 945 | 222 | 211 | 933 | 203 | 205 | 955 | 956 | 949 | 206 | 977 | 180 | 144 | 1013 | 19669 |
| 708 | 451 | 725 | 426 | 707 | 434 | 422 | 443 | 715 | 435 | 724 | 448 | 732 | 729 | 595 | 577 | 582 | 571 | 584 | 562 | 212 | 935 | 946 | 224 | 954 | 952 | 202 | 201 | 951 | 208 | 966 | 19 | 986 | 171 | 19669 |
| 452 | 705 | 687 | 689 | 465 | 472 | 461 | 469 | 681 | 683 | 466 | 94 | 698 | 477 | 589 | 572 | 583 | 578 | 581 | 568 | 960 | 194 | 185 | 189 | 973 | 20 | 173 | 196 | 958 | 970 | 98 | 964 | 168 | 989 | 19669 |
| 734 | 423 | 468 | 470 | 692 | 685 | 696 | 688 | 476 | 474 | 691 | 463 | 459 | 680 | 587 | 586 | 573 | 580 | 575 | 570 | 197 | 963 | 972 | 968 | 184 | 957 | 984 | 961 | 199 | 187 | 193 | 177 | 985 | 172 | 9669 |
| 720 | 437 | 454 | 703 | 673 | 653 | 667 | 665 | 496 | 499 | 487 | 657 | 486 | 502 | 569 | 579 | 576 | 585 | 574 | 588 | 154 | 988 | 159 | 166 | 163 | 990 | 146 | 997 | 999 | 162 | 1006 | 1002 | 1015 | 152 | 1969 |
| 438 | 719 | 678 | 479 | 504 | 484 | 490 | 492 | 661 | 658 | 670 | 500 | 671 | 655 | 565 | 567 | 594 | 561 | 593 | 591 | 1003 | 169 | 998 | 991 | 994 | 167 | 1011 | 160 | 158 | 995 | 151 | 155 | 1005 | 142 | 9669 |
| 713 | 444 | 679 | 478 | 488 | 669 | 633 | 520 | 507 | 522 | 513 | 651 | 646 | 36 | 305 | 852 | 38 | 319 | 813 | 344 | 368 | 789 | 760 | 397 | 403 | 754 | 414 | 737 | 416 | 417 | 74 | 739 | 744 | 419 | 669 |
| 736 | 421 | 700 | 457 | 495 | 662 | 637 | 524 | 650 | 635 | 644 | 506 | 511 | 521 | 293 | 864 | 821 | 336 | 355 | 802 | 786 | 371 | 387 | 770 | 748 | 409 | 743 | 420 | 741 | 740 | 415 | 418 | 413 | 738 | 9669 |
| 424 | 733 | 462 | 695 | 664 | 493 | 516 | 641 | 526 | 534 | 619 | 629 | 627 | 536 | 858 | 299 | 323 | 834 | 811 | 346 | 383 | 774 | 766 | 391 | 408 | 402 | 752 | 406 | 756 | 407 | 746 | 753 | 745 | 410 | 19669 |
| 441 | 716 | 693 | 464 | 660 | 497 | 652 | 505 | 623 | 631 | 538 | 528 | 530 | 621 | 848 | 309 | 322 | 835 | 804 | 353 | 782 | 375 | 772 | 385 | 755 | 749 | 405 | 751 | 401 | 750 | 411 | 404 | 412 | 747 | 19669 |
| 429 | 728 | 458 | 699 | 675 | 482 | 515 | 642 | 626 | 531 | 544 | 609 | 615 | 546 | 855 | 302 | 338 | 819 | 351 | 806 | 779 | 378 | 400 | 771 | 769 | 389 | 390 | 758 | 764 | 761 | 759 | 394 | 395 | 392 | 19669 |
| 445 | 712 | 480 | 677 | 481 | 676 | 517 | 640 | 532 | 625 | 548 | 613 | 542 | 611 | 287 | 870 | 841 | 316 | 342 | 815 | 784 | 373 | 386 | 757 | 388 | 768 | 767 | 399 | 393 | 396 | 398 | 763 | 762 | 765 | 9669 |
| 440 | 717 | 702 | 455 | 659 | 498 | 639 | 518 | 624 | 533 | 550 | 607 | 559 | 598 | 863 | 294 | 329 | 828 | 343 | 814 | 365 | 776 | 384 | 780 | 376 | 382 | 790 | 369 | 783 | 366 | 77 | 787 | 785 | 379 | 19669 |
| 436 | 721 | 697 | 460 | 501 | 656 | 638 | 519 | 617 | 540 | 610 | 547 | 602 | 555 | 308 | 849 | 829 | 328 | 807 | 350 | 381 | 792 | 773 | 377 | 781 | 775 | 367 | 788 | 374 | 791 | 380 | 370 | 372 | 778 | 9669 |
| 727 | 430 | 467 | 690 | 674 | 483 | 648 | 509 | 537 | 620 | 552 | 605 | 557 | 600 | 306 | 851 | 820 | 337 | 797 | 795 | 816 | 348 | 803 | 812 | 808 | 358 | 793 | 359 | 352 | 35 | 356 | 794 | 347 | 361 | 19669 |
| 431 | 726 | 701 | 456 | 485 | 672 | 647 | 510 | 628 | 529 | 541 | 616 | 554 | 603 | 850 | 307 | 340 | 817 | 362 | 360 | 341 | 809 | 354 | 345 | 349 | 799 | 364 | 798 | 805 | 800 | 801 | 363 | 810 | 796 | 9669 |
| 710 | 447 | 453 | 704 | 489 | 668 | 512 | 645 | 630 | 527 | 614 | 543 | 597 | 560 | 871 | 286 | 827 | 843 | 824 | 844 | 836 | 318 | 327 | 315 | 339 | 832 | 320 | 324 | 831 | 823 | 317 | 335 | 826 | 332 | 19669 |
| 730 | 427 | 686 | 471 | 663 | 494 | 514 | 643 | 539 | 618 | 612 | 545 | 556 | 601 | 288 | 869 | 314 | 330 | 333 | 313 | 321 | 839 | 830 | 842 | 818 | 325 | 837 | 833 | 326 | 334 | 840 | 822 | 331 | 825 | 19669 |
| 439 | 718 | 473 | 684 | 491 | 666 | 523 | 634 | 525 | 632 | 608 | 549 | 599 | 558 | 857 | 847 | 304 | 854 | 284 | 298 | 875 | 290 | 292 | 861 | 285 | 860 | 874 | 281 | 856 | 295 | 311 | 868 | 312 | 866 | 19669 |
| 711 | 446 | 475 | 682 | 654 | 503 | 508 | 649 | 535 | 622 | 606 | 551 | 604 | 553 | 310 | 300 | 853 | 303 | 873 | 859 | 282 | 867 | 865 | 296 | 872 | 297 | 283 | 876 | 301 | 862 | 846 | 289 | 845 | 291 | 19669 |
| 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 19669 | 1966 |




| 317 |  |  |  |  | Inder J. Taneja |  |  |  |  | https://inderjtaneja.com/ |  |  |  |  |  | https://numbers-magic.com/ |  |  |  |  |  | @utaneja |  |  |  | $34 \times 34$ |  |  |  |  |  |  | 1032 | $\begin{array}{\|l\|} 19669 \\ \hline 19669 \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1125 | 31 | 1146 | 1149 | 18 | 19 | 1127 | 23 | 1152 | 24 | 1154 | 14 | 20 | 1144 | 1142 | 16 | 1128 | 1135 | 1147 | 9 | 7 | 6 | 129 | 1130 | 25 | 21 | 204 | 953 | 76 | 181 | 999 | 158 | 125 |  |  |
| 32 | 1126 | 11 | 8 | 1139 | 1138 | 30 | 1134 | 5 | 1133 | 3 | 1143 | 1137 | 13 | 15 | 1141 | 29 | 22 | 10 | 1148 | 1150 | 1151 | 28 | 27 | 1136 | 1132 | 194 | 963 | 179 | 978 | 142 | 1015 | 1045 | 112 | 19669 |
| 1120 | 46 | 38 | 1122 | 1097 | 1118 | 55 | 1121 | 44 | 51 | 59 | 1103 | 45 | 1099 | 43 | 1107 | 47 | 41 | 57 | 1108 | 1115 | 34 | 1105 | 1109 | 1140 | 17 | 206 | 951 | 165 | 992 | 141 | 1016 | 132 | 1025 | 19669 |
| 37 | 1111 | 1119 | 35 | 60 | 39 | 1102 | 36 | 1113 | 1106 | 1098 | 54 | 1112 | 58 | 1114 | 50 | 1110 | 1116 | 1100 | 49 | 42 | 1123 | 48 | 52 | 1 | 1156 | 950 | 207 | 185 | 972 | 101 | 146 | 128 | 1029 | 19669 |
| 1091 | 1084 | 1085 | 64 | 62 | 79 | 1073 | 80 | 1081 | 1088 | 67 | 77 | 63 | 1089 | 78 | 1083 | 70 | 1075 | 81 | 83 | 1082 | 1092 | 1124 | 33 | 2 | 1155 | 198 | 959 | 989 | 168 | 998 | 159 | 130 | 1027 | 19669 |
| 66 | 73 | 72 | 1093 | 1095 | 1078 | 84 | 1077 | 76 | 69 | 1090 | 1080 | 1094 | 68 | 1079 | 74 | 1087 | 82 | 1076 | 1074 | 65 | 75 | 1101 | 56 | 1145 | 12 | 200 | 957 | 174 | 983 | 1006 | 151 | 1042 | 115 | 19669 |
| 103 | 1071 | 1061 | 1057 | 1068 | 87 | 1055 | 1069 | 1056 | 1058 | 1066 | 94 | 90 | 97 | 85 | 104 | 98 | 92 | 1064 | 95 | 1096 | 61 | 40 | 1117 | 26 | 1131 | 965 | 192 | 167 | 990 | 1017 | 140 | 111 | 1046 | 19669 |
| 1054 | 86 | 96 | 100 | 89 | 1070 | 102 | 88 | 101 | 99 | 91 | 1063 | 1067 | 1060 | 1072 | 1053 | 1059 | 1065 | 93 | 1062 | 71 | 1086 | 53 | 1104 | 1153 | 4 | 197 | 960 | 175 | 982 | 153 | 1004 | 1035 | 122 | 19669 |
| 842 | 818 | 327 | 340 | 322 | 819 | 328 | 832 | 737 | 725 | 22 | 736 | 430 | 428 | 733 | 32 | 417 | 431 | 73 | 728 | 419 | 427 | 472 | 685 | 702 | 455 | 193 | 964 | 984 | 173 | 145 | 1012 | 104 | 116 | 19669 |
| 339 | 315 | 830 | 817 | 835 | 338 | 829 | 325 | 420 | 432 | 735 | 421 | 727 | 729 | 424 | 425 | 740 | 726 | 423 | 429 | 730 | 738 | 687 | 470 | 709 | 448 | 96 | 196 | 988 | 169 | 1000 | 157 | 103 | 120 | 19669 |
| 828 | 329 | 366 | 809 | 345 | 346 | 803 | 802 | 436 | 714 | 724 | 713 | 722 | 434 | 718 | 720 | 438 | 441 | 440 | 442 | 426 | 731 | 692 | 465 | 452 | 705 | 189 | 968 | 99 | 166 | 154 | 1003 | 1038 | 119 | 19669 |
| 834 | 323 | 348 | 791 | 812 | 811 | 354 | 355 | 721 | 443 | 433 | 444 | 435 | 723 | 439 | 437 | 719 | 716 | 717 | 715 | 739 | 418 | 690 | 467 | 450 | 707 | 949 | 208 | 98 | 176 | 160 | 997 | 1043 | 114 | 19669 |
| 319 | 838 | 351 | 806 | 384 | 382 | 764 | 784 | 646 | 654 | 513 | 501 | 577 | 582 | 571 | 584 | 589 | 568 | 559 | 598 | 546 | 611 | 461 | 696 | 711 | 446 | 958 | 199 | 97 | 186 | 1002 | 155 | 102 | 136 | 19669 |
| 343 | 814 | 369 | 788 | 775 | 773 | 393 | 373 | 503 | 511 | 644 | 656 | 572 | 583 | 578 | 581 | 569 | 588 | 547 | 610 | 533 | 624 | 471 | 686 | 445 | 712 | 967 | 190 | 980 | 177 | 1010 | 147 | 110 | 1047 | 19669 |
| 330 | 827 | 353 | 804 | 782 | 375 | 401 | 756 | 643 | 514 | 524 | 633 | 586 | 573 | 580 | 575 | 587 | 570 | 600 | 557 | 622 | 535 | 464 | 693 | 458 | 699 | 952 | 205 | 187 | 970 | 148 | 1009 | 124 | 1033 | 19669 |
| 318 | 839 | 807 | 350 | 763 | 394 | 410 | 747 | 655 | 502 | 525 | 632 | 579 | 576 | 585 | 574 | 595 | 562 | 555 | 602 | 627 | 530 | 689 | 468 | 698 | 459 | 203 | 954 | 170 | 987 | 100 | 152 | 113 | 1044 | 19669 |
| 843 | 314 | 357 | 800 | 395 | 762 | 760 | 397 | 507 | 650 | 522 | 635 | 564 | 563 | 590 | 596 | 566 | 592 | 553 | 604 | 623 | 534 | 462 | 695 | 456 | 701 | 966 | 191 | 974 | 183 | 996 | 161 | 105 | 1052 | 19669 |
| 324 | 833 | 798 | 359 | 378 | 779 | 414 | 743 | 649 | 508 | 517 | 640 | 593 | 594 | 567 | 561 | 565 | 591 | 599 | 558 | 538 | 619 | 694 | 463 | 454 | 703 | 201 | 956 | 977 | 180 | 149 | 1008 | 1034 | 123 | 19669 |
| 820 | 337 | 789 | 368 | 766 | 391 | 742 | 415 | 651 | 506 | 639 | 518 | 556 | 554 | 608 | 597 | 552 | 607 | 606 | 548 | 616 | 541 | 469 | 688 | 457 | 700 | 962 | 195 | 171 | 986 | 1020 | 137 | 129 | 1028 | 19669 |
| 837 | 320 | 367 | 790 | 768 | 389 | 758 | 399 | 510 | 647 | 637 | 520 | 601 | 603 | 549 | 560 | 605 | 550 | 609 | 551 | 536 | 621 | 691 | 466 | 697 | 460 | 955 | 202 | 973 | 184 | 1019 | 138 | 1039 | 118 | 19669 |
| 333 | 824 | 792 | 365 | 387 | 770 | 411 | 746 | 652 | 505 | 630 | 527 | 543 | 612 | 540 | 618 | 537 | 626 | 625 | 613 | 529 | 542 | 708 | 447 | 706 | 453 | 979 | 172 | 188 | 975 | 164 | 993 | 1040 | 117 | 19669 |
| 816 | 341 | 363 | 794 | 777 | 380 | 406 | 751 | 642 | 515 | 519 | 638 | 614 | 545 | 617 | 539 | 620 | 531 | 532 | 544 | 615 | 628 | 449 | 710 | 704 | 451 | 178 | 985 | 182 | 969 | 143 | 1014 | 131 | 1026 | 19669 |
| 813 | 344 | 372 | 785 | 376 | 781 | 412 | 745 | 504 | 653 | 634 | 523 | 480 | 677 | 668 | 491 | 490 | 495 | 500 | 665 | 659 | 497 | 661 | 494 | 658 | 664 | 995 | 150 | 144 | 1001 | 163 | 1018 | 1051 | 106 | 19669 |
| 826 | 331 | 787 | 370 | 379 | 778 | 753 | 404 | 512 | 645 | 636 | 521 | 681 | 476 | 489 | 666 | 667 | 662 | 657 | 492 | 498 | 660 | 496 | 663 | 499 | 493 | 162 | 1007 | 1013 | 156 | 139 | 994 | 108 | 1049 | 19669 |
| 317 | 840 | 810 | 347 | 392 | 765 | 741 | 416 | 516 | 641 | 528 | 629 | 477 | 481 | 487 | 86 | 679 | 674 | 74 | 669 | 682 | 673 | 479 | 684 | 482 | 672 | 133 | 121 | 1048 | 1031 | 1023 | 1030 | 107 | 135 | 19669 |
| 334 | 823 | 799 | 358 | 772 | 385 | 750 | 407 | 509 | 648 | 631 | 526 | 676 | 680 | 670 | 671 | 478 | 483 | 683 | 488 | 475 | 484 | 678 | 473 | 675 | 485 | 1024 | 1036 | 109 | 126 | 134 | 127 | 1022 | 1050 | 19669 |
| 332 | 825 | 795 | 362 | 783 | 374 | 757 | 400 | 917 | 240 | 899 | 258 | 880 | 277 | 849 | 297 | 303 | 858 | 310 | 859 | 295 | 864 | 845 | 863 | 309 | 296 | 851 | 853 | 301 | 305 | 307 | 302 | 846 | 857 | 19669 |
| 821 | 336 | 352 | 805 | 381 | 776 | 408 | 749 | 233 | 924 | 261 | 896 | 866 | 291 | 308 | 860 | 854 | 299 | 847 | 298 | 862 | 293 | 312 | 294 | 848 | 861 | 306 | 304 | 856 | 852 | 850 | 855 | 311 | 300 | 19669 |
| 836 | 321 | 801 | 356 | 769 | 388 | 744 | 413 | 933 | 224 | 898 | 259 | 276 | 865 | 873 | 286 | 876 | 877 | 283 | 886 | 287 | 288 | 872 | 274 | 867 | 279 | 272 | 875 | 270 | 888 | 289 | 882 | 278 | 884 | 19669 |
| 335 | 822 | 808 | 349 | 390 | 767 | 748 | 409 | 937 | 220 | 248 | 909 | 292 | 881 | 284 | 871 | 281 | 280 | 874 | 271 | 870 | 869 | 285 | 883 | 290 | 878 | 885 | 282 | 887 | 269 | 868 | 275 | 879 | 273 | 19669 |
| 326 | 831 | 793 | 364 | 780 | 377 | 403 | 754 | 236 | 921 | 253 | 245 | 894 | 900 | 906 | 262 | 890 | 913 | 242 | 916 | 905 | 260 | 911 | 268 | 256 | 265 | 243 | 254 | 893 | 90 | 891 | 247 | 908 | 255 | 19669 |
| 815 | 342 | 786 | 371 | 761 | 396 | 752 | 405 | 211 | 946 | 912 | 904 | 263 | 257 | 251 | 895 | 267 | 244 | 915 | 241 | 252 | 897 | 246 | 889 | 901 | 892 | 914 | 903 | 264 | 250 | 266 | 910 | 249 | 902 | 19669 |
| 316 | 841 | 360 | 797 | 386 | 771 | 402 | 755 | 927 | 923 | 214 | 223 | 231 | 237 | 929 | 227 | 210 | 232 | 932 | 922 | 936 | 918 | 948 | 212 | 218 | 222 | 238 | 229 | 931 | 944 | 217 | 942 | 938 | 941 | 19669 |
| 844 | 313 | 361 | 796 | 383 | 774 | 398 | 759 | 234 | 230 | 943 | 934 | 926 | 920 | 228 | 930 | 947 | 925 | 225 | 235 | 221 | 239 | 209 | 945 | 939 | 935 | 919 | 928 | 226 | 213 | 940 | 215 | 219 | 216 | 19669 |
| 19669 | 969 |  |  |  |  |  | 1966 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



More examples of similar kind are given in pdf file in author's site https://shorturl.at/ckptR.

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## 4 Author's Contribution to Magic Squares and Recreation Numbers

For author's contribution to magic squares and recreation numbers please see the links below:

- Inder J. Taneja, Magic Squares, https://inderjtaneja.com/2019/06/27/publications-magic-squares/
- Inder J. Taneja, Recreation of Numbers, https://inderjtaneja.com/2019/06/27/publications-recreation-of-numbers/


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[^0]:    ${ }^{1}$ Formerly, Professor of Mathematics, Federal University of Santa Catarina, Florianópolis, SC, Brazil (1978-2012).
    E-mail: ijtaneja@gmail.com;
    Web-sites: http://inderjtaneja.com; http://numbers-magic.com;
    Twitter: @IJTANEJA

