

Chapter 4: Advanced Algebraic Study of Magic Cubes

Section 4-2: 'Composite' Pan-Magic Cubes of Order 4 and the Meaning of Complementary Pairs: Kanji Setsuda

#1. What do I mean by the 'Primitive Solutions' of our Object?

Here in this section I want to deal with the primitive solution set of 'Composite & Pan-triagonal' Magic Cubes of Order 4 in all cases.

What do I mean by the term 'primitive solutions'? I mean it as the first primitive set of solutions just before any 'Normalization' by which we cut off all the 'rotated patterns' or 'reflected patterns' out of them.

As you possibly know, the primitive solutions pre-normalized of any 2-dimensional magic squares usually count 8 times as many as the standard solutions normalized.

How about the 3-dimensional magic cubes?

The primitive solutions count 48 times as many as the standard solutions. You may think "So many!", but they really have so many 'reflected' or 'rotated' patterns there.

Before all let me list out all the conceptual diagrams of 'Primitive Solutions' with so many rotations and reflections, by the style of 48 Basic Forms.

The first 6 patterns tell us about the 'Umbrella Rotations' around the main triagonal, and the other 8 patterns of 'Dice Roll' make 6 x 8 different appearances in all.

** 48 Basic Forms for the 'Primitive' Magic Cubes of Order 4 Pre-normalized **

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| 33 | 25 | 34 | 26 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | 29 | 38 | 30 | 39 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 49 | 41 | 50 | 42 | 51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 53 | 45 | 54 | 46 | 55 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 57 | 58 | 59 | 60 | 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 61 | 62 | 63 | 64 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 17 | 9 | 25 | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 33 | 6 | 37 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 49 | 22 | 53 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 34 | 7 | 38 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | 50 | 23 | 54 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 35 | 8 | 39 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 51 | 24 | 55 | 28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 40 | 44 | 48 | 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | 56 | 60 | 64 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 17 | 18 | 19 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 33 | 6 | 34 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | 49 | 22 | 50 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 37 | 10 | 38 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 53 | 26 | 54 | 27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 41 | 14 | 42 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | 57 | 30 | 58 | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | 46 | 47 | 48 | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 61 | 62 | 63 | 64 | 64 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p style="text-align: center;">7/ 7/</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr><td>4</td><td>20</td><td>36</td><td>52</td></tr> <tr><td>3</td><td>19</td><td>35</td><td>51</td></tr> <tr><td>8</td><td>2</td><td>24</td><td>18</td></tr> <tr><td>7</td><td>1</td><td>23</td><td>17</td></tr> <tr><td>12</td><td>6</td><td>28</td><td>22</td></tr> <tr><td>11</td><td>5</td><td>27</td><td>21</td></tr> <tr><td>16</td><td>10</td><td>32</td><td>26</td></tr> <tr><td>15</td><td>9</td><td>31</td><td>25</td></tr> <tr><td>14</td><td>30</td><td>46</td><td>62</td></tr> <tr><td>13</td><td>29</td><td>45</td><td>61</td></tr> </table> | 4 | 20 | 36 | 52 | 3 | 19 | 35 | 51 | 8 | 2 | 24 | 18 | 7 | 1 | 23 | 17 | 12 | 6 | 28 | 22 | 11 | 5 | 27 | 21 | 16 | 10 | 32 | 26 | 15 | 9 | 31 | 25 | 14 | 30 | 46 | 62 | 13 | 29 | 45 | 61 | <p style="text-align: center;">8/ 8/</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr><td>13</td><td>29</td><td>45</td><td>61</td></tr> <tr><td>9</td><td>25</td><td>41</td><td>57</td></tr> <tr><td>14</td><td>5</td><td>30</td><td>21</td></tr> <tr><td>10</td><td>1</td><td>26</td><td>17</td></tr> <tr><td>15</td><td>6</td><td>31</td><td>22</td></tr> <tr><td>11</td><td>2</td><td>27</td><td>18</td></tr> <tr><td>16</td><td>7</td><td>32</td><td>23</td></tr> <tr><td>12</td><td>3</td><td>28</td><td>19</td></tr> <tr><td>8</td><td>24</td><td>40</td><td>56</td></tr> <tr><td>4</td><td>20</td><td>36</td><td>52</td></tr> </table> | 13 | 29 | 45 | 61 | 9 | 25 | 41 | 57 | 14 | 5 | 30 | 21 | 10 | 1 | 26 | 17 | 15 | 6 | 31 | 22 | 11 | 2 | 27 | 18 | 16 | 7 | 32 | 23 | 12 | 3 | 28 | 19 | 8 | 24 | 40 | 56 | 4 | 20 | 36 | 52 | <p style="text-align: center;">9/ 9/</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr><td>4</td><td>8</td><td>12</td><td>16</td></tr> <tr><td>3</td><td>7</td><td>11</td><td>15</td></tr> <tr><td>20</td><td>2</td><td>24</td><td>6</td></tr> <tr><td>19</td><td>1</td><td>23</td><td>5</td></tr> <tr><td>36</td><td>18</td><td>40</td><td>22</td></tr> <tr><td>35</td><td>17</td><td>39</td><td>21</td></tr> <tr><td>52</td><td>34</td><td>56</td><td>38</td></tr> <tr><td>51</td><td>33</td><td>55</td><td>37</td></tr> <tr><td>50</td><td>54</td><td>58</td><td>62</td></tr> <tr><td>49</td><td>53</td><td>57</td><td>61</td></tr> </table> | 4 | 8 | 12 | 16 | 3 | 7 | 11 | 15 | 20 | 2 | 24 | 6 | 19 | 1 | 23 | 5 | 36 | 18 | 40 | 22 | 35 | 17 | 39 | 21 | 52 | 34 | 56 | 38 | 51 | 33 | 55 | 37 | 50 | 54 | 58 | 62 | 49 | 53 | 57 | 61 | | | | | | | | | | | | | | | |
| 4 | 20 | 36 | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 19 | 35 | 51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 2 | 24 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 1 | 23 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 6 | 28 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 5 | 27 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 10 | 32 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 9 | 31 | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 30 | 46 | 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 29 | 45 | 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 29 | 45 | 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 25 | 41 | 57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 5 | 30 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 1 | 26 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 6 | 31 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 2 | 27 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 7 | 32 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 3 | 28 | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 24 | 40 | 56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 20 | 36 | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 8 | 12 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 7 | 11 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 2 | 24 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | 1 | 23 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 18 | 40 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | 17 | 39 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | 34 | 56 | 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51 | 33 | 55 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 54 | 58 | 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 49 | 53 | 57 | 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p style="text-align: center;">10/ 10/</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr><td>13</td><td>14</td><td>15</td><td>16</td></tr> <tr><td>9</td><td>10</td><td>11</td><td>12</td></tr> <tr><td>29</td><td>5</td><td>30</td><td>6</td></tr> <tr><td>25</td><td>1</td><td>26</td><td>2</td></tr> <tr><td>45</td><td>21</td><td>46</td><td>22</td></tr> <tr><td>41</td><td>17</td><td>42</td><td>18</td></tr> <tr><td>61</td><td>37</td><td>62</td><td>38</td></tr> <tr><td>57</td><td>33</td><td>58</td><td>34</td></tr> <tr><td>53</td><td>54</td><td>55</td><td>56</td></tr> <tr><td>49</td><td>50</td><td>51</td><td>52</td></tr> </table> | 13 | 14 | 15 | 16 | 9 | 10 | 11 | 12 | 29 | 5 | 30 | 6 | 25 | 1 | 26 | 2 | 45 | 21 | 46 | 22 | 41 | 17 | 42 | 18 | 61 | 37 | 62 | 38 | 57 | 33 | 58 | 34 | 53 | 54 | 55 | 56 | 49 | 50 | 51 | 52 | <p style="text-align: center;">11/ 11/</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr><td>49</td><td>53</td><td>57</td><td>61</td></tr> <tr><td>33</td><td>37</td><td>41</td><td>45</td></tr> <tr><td>50</td><td>17</td><td>54</td><td>21</td></tr> <tr><td>34</td><td>1</td><td>38</td><td>5</td></tr> <tr><td>51</td><td>18</td><td>55</td><td>22</td></tr> <tr><td>35</td><td>2</td><td>39</td><td>6</td></tr> <tr><td>52</td><td>19</td><td>56</td><td>23</td></tr> <tr><td>36</td><td>3</td><td>40</td><td>7</td></tr> <tr><td>20</td><td>24</td><td>28</td><td>32</td></tr> <tr><td>4</td><td>8</td><td>12</td><td>16</td></tr> </table> | 49 | 53 | 57 | 61 | 33 | 37 | 41 | 45 | 50 | 17 | 54 | 21 | 34 | 1 | 38 | 5 | 51 | 18 | 55 | 22 | 35 | 2 | 39 | 6 | 52 | 19 | 56 | 23 | 36 | 3 | 40 | 7 | 20 | 24 | 28 | 32 | 4 | 8 | 12 | 16 | <p style="text-align: center;">12/ 12/</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr><td>49</td><td>50</td><td>51</td><td>52</td></tr> <tr><td>33</td><td>34</td><td>35</td><td>36</td></tr> <tr><td>53</td><td>17</td><td>54</td><td>18</td></tr> <tr><td>37</td><td>1</td><td>38</td><td>2</td></tr> <tr><td>57</td><td>21</td><td>58</td><td>22</td></tr> <tr><td>41</td><td>5</td><td>42</td><td>6</td></tr> <tr><td>61</td><td>25</td><td>62</td><td>26</td></tr> <tr><td>45</td><td>9</td><td>46</td><td>10</td></tr> <tr><td>29</td><td>30</td><td>31</td><td>32</td></tr> <tr><td>13</td><td>14</td><td>15</td><td>16</td></tr> </table> | 49 | 50 | 51 | 52 | 33 | 34 | 35 | 36 | 53 | 17 | 54 | 18 | 37 | 1 | 38 | 2 | 57 | 21 | 58 | 22 | 41 | 5 | 42 | 6 | 61 | 25 | 62 | 26 | 45 | 9 | 46 | 10 | 29 | 30 | 31 | 32 | 13 | 14 | 15 | 16 | | | | | | | | | | | | | | | |
| 13 | 14 | 15 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 10 | 11 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | 5 | 30 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 1 | 26 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | 21 | 46 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41 | 17 | 42 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 61 | 37 | 62 | 38 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 57 | 33 | 58 | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 53 | 54 | 55 | 56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 49 | 50 | 51 | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 49 | 53 | 57 | 61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | 37 | 41 | 45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 | 17 | 54 | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 34 | 1 | 38 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 51 | 18 | 55 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | 2 | 39 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 52 | 19 | 56 | 23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 36 | 3 | 40 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 24 | 28 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 8 | 12 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 49 | 50 | 51 | 52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 33 | 34 | 35 | 36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 53 | 17 | 54 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 37 | 1 | 38 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 57 | 21 | 58 | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41 | 5 | 42 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 61 | 25 | 62 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 45 | 9 | 46 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29 | 30 | 31 | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 14 | 15 | 16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| 13 | 29 | 45 | 61 |
| 14 | 30 | 46 | 62 |
| 9 | 15 | 25 | 31 |
| 41 | 47 | 57 | 63 |
| 10 | 16 | 26 | 32 |
| 42 | 48 | 58 | 64 |
| 5 | 11 | 21 | 27 |
| 37 | 43 | 53 | 59 |
| 6 | 12 | 22 | 28 |
| 38 | 44 | 54 | 60 |
| 1 | 7 | 17 | 23 |
| 33 | 39 | 49 | 55 |
| 2 | 8 | 18 | 24 |
| 34 | 40 | 50 | 56 |
| 3 | 19 | 35 | 51 |
| 4 | 20 | 36 | 52 |

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| 4 | 20 | 36 | 52 |
| 8 | 24 | 40 | 56 |
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| 35 | 44 | 51 | 60 |
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| 39 | 48 | 55 | 64 |
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| 34 | 43 | 50 | 59 |
| 6 | 15 | 22 | 31 |
| 38 | 47 | 54 | 63 |
| 1 | 10 | 17 | 26 |
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| 37 | 46 | 53 | 62 |
| 9 | 25 | 41 | 57 |
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| 49 | 53 | 57 | 61 |
| 50 | 54 | 58 | 62 |
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| 42 | 60 | 46 | 64 |
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| 25 | 43 | 29 | 47 |
| 18 | 36 | 22 | 40 |
| 26 | 44 | 30 | 48 |
| 1 | 19 | 5 | 23 |
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| 49 | 50 | 51 | 52 |
| 53 | 54 | 55 | 56 |
| 33 | 57 | 34 | 58 |
| 35 | 59 | 36 | 60 |
| 37 | 61 | 38 | 62 |
| 39 | 63 | 40 | 64 |
| 17 | 41 | 18 | 42 |
| 19 | 43 | 20 | 44 |
| 21 | 45 | 22 | 46 |
| 23 | 47 | 24 | 48 |
| 1 | 25 | 2 | 26 |
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| 2 | 35 | 6 | 39 |
| 10 | 43 | 14 | 47 |
| 18 | 51 | 22 | 55 |
| 26 | 59 | 30 | 63 |
| 1 | 34 | 5 | 38 |
| 9 | 42 | 13 | 46 |
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| 13 | 14 | 15 | 16 |
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| 11 | 47 | 12 | 48 |
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| 27 | 63 | 28 | 64 |
| 5 | 41 | 6 | 42 |
| 7 | 43 | 8 | 44 |
| 21 | 57 | 22 | 58 |
| 23 | 59 | 24 | 60 |
| 1 | 37 | 2 | 38 |
| 3 | 39 | 4 | 40 |
| 17 | 53 | 18 | 54 |
| 19 | 55 | 20 | 56 |
| 33 | 34 | 35 | 36 |
| 49 | 50 | 51 | 52 |

19/

| | | | |
|----|----|----|----|
| 16 | 32 | 48 | 64 |
| 15 | 31 | 47 | 63 |
| 12 | 14 | 28 | 30 |
| 44 | 46 | 60 | 62 |
| 11 | 13 | 27 | 29 |
| 43 | 45 | 59 | 61 |
| 8 | 10 | 24 | 26 |
| 40 | 42 | 56 | 58 |
| 7 | 9 | 23 | 25 |
| 39 | 41 | 55 | 57 |
| 4 | 6 | 20 | 22 |
| 36 | 38 | 52 | 54 |
| 3 | 5 | 19 | 21 |
| 35 | 37 | 51 | 53 |
| 2 | 18 | 34 | 50 |
| 1 | 17 | 33 | 49 |

20/

| | | | |
|----|----|----|----|
| 16 | 32 | 48 | 64 |
| 12 | 28 | 44 | 60 |
| 15 | 8 | 31 | 24 |
| 47 | 40 | 63 | 56 |
| 11 | 4 | 27 | 20 |
| 43 | 36 | 59 | 52 |
| 14 | 7 | 30 | 23 |
| 46 | 39 | 62 | 55 |
| 10 | 3 | 26 | 19 |
| 42 | 35 | 58 | 51 |
| 13 | 6 | 29 | 22 |
| 45 | 38 | 61 | 54 |
| 9 | 2 | 25 | 18 |
| 41 | 34 | 57 | 50 |
| 5 | 21 | 37 | 53 |
| 1 | 17 | 33 | 49 |

21/

| | | | |
|----|----|----|----|
| 52 | 56 | 60 | 64 |
| 51 | 55 | 59 | 63 |
| 36 | 50 | 40 | 54 |
| 44 | 58 | 48 | 62 |
| 35 | 49 | 39 | 53 |
| 43 | 57 | 47 | 61 |
| 20 | 34 | 24 | 38 |
| 28 | 42 | 32 | 46 |
| 19 | 33 | 23 | 37 |
| 27 | 41 | 31 | 45 |
| 4 | 18 | 8 | 22 |
| 12 | 26 | 16 | 30 |
| 3 | 17 | 7 | 21 |
| 11 | 25 | 15 | 29 |
| 2 | 6 | 10 | 14 |
| 1 | 5 | 9 | 13 |

22/

| | | | |
|----|----|----|----|
| 61 | 62 | 63 | 64 |
| 57 | 58 | 59 | 60 |
| 45 | 53 | 46 | 54 |
| 47 | 55 | 48 | 56 |
| 41 | 49 | 42 | 50 |
| 43 | 51 | 44 | 52 |
| 29 | 37 | 30 | 38 |
| 31 | 39 | 32 | 40 |
| 25 | 33 | 26 | 34 |
| 27 | 35 | 28 | 36 |
| 13 | 21 | 14 | 22 |
| 15 | 23 | 16 | 24 |
| 9 | 17 | 10 | 18 |
| 11 | 19 | 12 | 20 |
| 5 | 6 | 7 | 8 |
| 1 | 2 | 3 | 4 |

23/

| | | | |
|----|----|----|----|
| 52 | 56 | 60 | 64 |
| 36 | 40 | 44 | 48 |
| 51 | 20 | 55 | 24 |
| 59 | 28 | 63 | 32 |
| 35 | 4 | 39 | 8 |
| 43 | 12 | 47 | 16 |
| 50 | 19 | 54 | 23 |
| 58 | 27 | 62 | 31 |
| 34 | 3 | 38 | 7 |
| 42 | 11 | 46 | 15 |
| 49 | 18 | 53 | 22 |
| 57 | 26 | 61 | 30 |
| 33 | 2 | 37 | 6 |
| 41 | 10 | 45 | 14 |
| 17 | 21 | 25 | 29 |
| 1 | 5 | 9 | 13 |

24/

| | | | |
|----|----|----|----|
| 61 | 62 | 63 | 64 |
| 45 | 46 | 47 | 48 |
| 57 | 29 | 58 | 30 |
| 59 | 31 | 60 | 32 |
| 41 | 13 | 42 | 14 |
| 43 | 15 | 44 | 16 |
| 53 | 25 | 54 | 26 |
| 55 | 27 | 56 | 28 |
| 37 | 9 | 38 | 10 |
| 39 | 11 | 40 | 12 |
| 49 | 21 | 50 | 22 |
| 51 | 23 | 52 | 24 |
| 33 | 5 | 34 | 6 |
| 35 | 7 | 36 | 8 |
| 17 | 18 | 19 | 20 |
| 1 | 2 | 3 | 4 |

25/

| | | | |
|----|----|----|----|
| 49 | 33 | 17 | 1 |
| 50 | 34 | 18 | 2 |
| 53 | 51 | 37 | 35 |
| 21 | 19 | 5 | 3 |
| 54 | 52 | 38 | 36 |
| 22 | 20 | 6 | 4 |
| 57 | 55 | 41 | 39 |
| 25 | 23 | 9 | 7 |
| 58 | 56 | 42 | 40 |
| 26 | 24 | 10 | 8 |
| 61 | 59 | 45 | 43 |
| 29 | 27 | 13 | 11 |
| 62 | 60 | 46 | 44 |
| 30 | 28 | 14 | 12 |
| 63 | 47 | 31 | 15 |
| 64 | 48 | 32 | 16 |

26/

| | | | |
|----|----|----|----|
| 49 | 33 | 17 | 1 |
| 53 | 37 | 21 | 5 |
| 50 | 57 | 34 | 41 |
| 18 | 25 | 2 | 9 |
| 54 | 61 | 38 | 45 |
| 22 | 29 | 6 | 13 |
| 51 | 58 | 35 | 42 |
| 19 | 26 | 3 | 10 |
| 55 | 62 | 39 | 46 |
| 23 | 30 | 7 | 14 |
| 52 | 59 | 36 | 43 |
| 20 | 27 | 4 | 11 |
| 56 | 63 | 40 | 47 |
| 24 | 31 | 8 | 15 |
| 60 | 44 | 28 | 12 |
| 64 | 48 | 32 | 16 |

27/

| | | | |
|----|----|----|----|
| 13 | 9 | 5 | 1 |
| 14 | 10 | 6 | 2 |
| 29 | 15 | 25 | 11 |
| 21 | 7 | 17 | 3 |
| 30 | 16 | 26 | 12 |
| 22 | 8 | 18 | 4 |
| 45 | 31 | 41 | 27 |
| 37 | 23 | 33 | 19 |
| 46 | 32 | 42 | 28 |
| 38 | 24 | 34 | 20 |
| 61 | 47 | 57 | 43 |
| 53 | 39 | 49 | 35 |
| 62 | 48 | 58 | 44 |
| 54 | 40 | 50 | 36 |
| 63 | 59 | 55 | 51 |
| 64 | 60 | 56 | 52 |

28/

| | | | |
|----|----|----|----|
| 4 | 3 | 2 | 1 |
| 8 | 7 | 6 | 5 |
| 20 | 12 | 19 | 11 |
| 18 | 10 | 17 | 9 |
| 24 | 16 | 23 | 15 |
| 22 | 14 | 21 | 13 |
| 36 | 28 | 35 | 27 |
| 34 | 26 | 33 | 25 |
| 40 | 32 | 39 | 31 |
| 38 | 30 | 37 | 29 |
| 52 | 44 | 51 | 43 |
| 50 | 42 | 49 | 41 |
| 56 | 48 | 55 | 47 |
| 54 | 46 | 53 | 45 |
| 60 | 59 | 58 | 57 |
| 64 | 63 | 62 | 61 |

29/

| | | | |
|----|----|----|----|
| 13 | 9 | 5 | 1 |
| 29 | 25 | 21 | 17 |
| 14 | 45 | 10 | 41 |
| 6 | 37 | 2 | 33 |
| 30 | 61 | 26 | 57 |
| 22 | 53 | 18 | 49 |
| 15 | 46 | 11 | 42 |
| 7 | 38 | 3 | 34 |
| 31 | 62 | 27 | 58 |
| 23 | 54 | 19 | 50 |
| 16 | 47 | 12 | 43 |
| 8 | 39 | 4 | 35 |
| 32 | 63 | 28 | 59 |
| 24 | 55 | 20 | 51 |
| 48 | 44 | 40 | 36 |
| 64 | 60 | 56 | 52 |

30/

| | | | |
|----|----|----|----|
| 4 | 3 | 2 | 1 |
| 20 | 19 | 18 | 17 |
| 8 | 36 | 7 | 35 |
| 6 | 34 | 5 | 33 |
| 24 | 52 | 23 | 51 |
| 22 | 50 | 21 | 49 |
| 12 | 40 | 11 | 39 |
| 10 | 38 | 9 | 37 |
| 28 | 56 | 27 | 55 |
| 26 | 54 | 25 | 53 |
| 16 | 44 | 15 | 43 |
| 14 | 42 | 13 | 41 |
| 32 | 60 | 31 | 59 |
| 30 | 58 | 29 | 57 |
| 48 | 47 | 46 | 45 |
| 64 | 63 | 62 | 61 |

31/

| | | | |
|----|----|----|----|
| 52 | 36 | 20 | 4 |
| 51 | 35 | 19 | 3 |
| 56 | 50 | 40 | 34 |
| 24 | 18 | 8 | 2 |
| 55 | 49 | 39 | 33 |
| 23 | 17 | 7 | 1 |
| 60 | 54 | 44 | 38 |
| 28 | 22 | 12 | 6 |
| 59 | 53 | 43 | 37 |
| 27 | 21 | 11 | 5 |
| 64 | 58 | 48 | 42 |
| 32 | 26 | 16 | 10 |
| 63 | 57 | 47 | 41 |
| 31 | 25 | 15 | 9 |
| 62 | 46 | 30 | 14 |
| 61 | 45 | 29 | 13 |

32/

| | | | |
|----|----|----|----|
| 61 | 45 | 29 | 13 |
| 57 | 41 | 25 | 9 |
| 62 | 53 | 46 | 37 |
| 30 | 21 | 14 | 5 |
| 58 | 49 | 42 | 33 |
| 26 | 17 | 10 | 1 |
| 63 | 54 | 47 | 38 |
| 31 | 22 | 15 | 6 |
| 59 | 50 | 43 | 34 |
| 27 | 18 | 11 | 2 |
| 64 | 55 | 48 | 39 |
| 32 | 23 | 16 | 7 |
| 60 | 51 | 44 | 35 |
| 28 | 19 | 12 | 3 |
| 56 | 40 | 24 | 8 |
| 52 | 36 | 20 | 4 |

33/

| | | | |
|----|----|----|----|
| 16 | 12 | 8 | 4 |
| 15 | 11 | 7 | 3 |
| 32 | 14 | 28 | 10 |
| 24 | 6 | 20 | 2 |
| 31 | 13 | 27 | 9 |
| 23 | 5 | 19 | 1 |
| 48 | 30 | 44 | 26 |
| 40 | 22 | 36 | 18 |
| 47 | 29 | 43 | 25 |
| 39 | 21 | 35 | 17 |
| 64 | 46 | 60 | 42 |
| 56 | 38 | 52 | 34 |
| 63 | 45 | 59 | 41 |
| 55 | 37 | 51 | 33 |
| 62 | 58 | 54 | 50 |
| 61 | 57 | 53 | 49 |

| | | |
|--|---|--|
| <p style="text-align: center;">34/</p> <pre> 16-----15-----14-----13 12 11 10 9 32 8 31 7 30 6 29 5 28 4---27---3---26---2---+25---1 48 24 47 23 46 22 45 21 44 20 43 19 42 18 41 17 64-40- 63-39- 62-38- 61 37 60 36 59 35 58 34 57 33 56 55 54 53 52-----51-----50-----49 </pre> | <p style="text-align: center;">35/</p> <pre> 61-----57-----53-----49 45 41 37 33 62 29 58 25 54 21 50 17 46 13--42--9--38--5--34--1 63 30 59 26 55 22 51 18 47 14 43 10 39 6 35 2 64-31- 60-27- 56-23- 52 19 48 15 44 11 40 7 36 3 32 28 24 20 16-----12-----8-----4 </pre> | <p style="text-align: center;">36/</p> <pre> 52-----51-----50-----49 36 35 34 33 56 20 55 19 54 18 53 17 40 4---39---3---38---2---+37---1 60 24 59 23 58 22 57 21 44 8 43 7 42 6 41 5 64-28- 63-27- 62-26- 61 25 48 12 47 11 46 10 45 9 32 31 30 29 16-----15-----14-----13 </pre> |
| <p style="text-align: center;">37/</p> <pre> 61-----45-----29-----13 62 46 30 14 57 63 41 47 25 31 9 15 58 64--42--48--26--32--10--16 53 59 37 43 21 27 5 11 54 60 38 44 22 28 6 12 49-55- 33-39- 17-23- 1 7 50 56 34 40 18 24 2 8 51 35 19 3 52-----36-----20-----4 </pre> | <p style="text-align: center;">38/</p> <pre> 52-----36-----20-----4 56 40 24 8 51 60 35 44 19 28 3 12 55 64--39--48--23--32--7--16 50 59 34 43 18 27 2 11 54 63 38 47 22 31 6 15 49-58- 33-42- 17-26- 1 10 53 62 37 46 21 30 5 14 57 41 25 9 61-----45-----29-----13 </pre> | <p style="text-align: center;">39/</p> <pre> 61-----57-----53-----49 62 58 54 50 45 63 41 59 37 55 33 51 46 64--42--60--38--56--34--52 29 47 25 43 21 39 17 35 30 48 26 44 22 40 18 36 13-31- 9-27- 5-23- 1 19 14 32 10 28 6 24 2 20 15 11 7 3 16-----12-----8-----4 </pre> |
| <p style="text-align: center;">40/</p> <pre> 52-----51-----50-----49 56 55 54 53 36 60 35 59 34 58 33 57 40 64--39--63--38--62--37--61 20 44 19 43 18 42 17 41 24 48 23 47 22 46 21 45 4-28- 3-27- 2-26- 1 25 8 32 7 31 6 30 5 29 12 11 10 9 16-----15-----14-----13 </pre> | <p style="text-align: center;">41/</p> <pre> 16-----12-----8-----4 32 28 24 20 15 48 11 44 7 40 3 36 31 64--27--60--23--56--19--52 14 47 10 43 6 39 2 35 30 63 26 59 22 55 18 51 13-46- 9-42- 5-38- 1 34 29 62 25 58 21 54 17 50 45 41 37 33 61-----57-----53-----49 </pre> | <p style="text-align: center;">42/</p> <pre> 16-----15-----14-----13 32 31 30 29 12 48 11 47 10 46 9 45 28 64--27--63--26--62--25--61 8 44 7 43 6 42 5 41 24 60 23 59 22 58 21 57 4-40- 3-39- 2-38- 1 37 20 56 19 55 18 54 17 53 36 35 34 33 52-----51-----50-----49 </pre> |
| <p style="text-align: center;">43/</p> <pre> 64-----48-----32-----16 63 47 31 15 60 62 44 46 28 30 12 14 59 61--43--45--27--29--11--13 56 58 40 42 24 26 8 10 55 57 39 41 23 25 7 9 52-54- 36-38- 20-22- 4 6 51 53 35 37 19 21 3 5 50 34 18 2 49-----33-----17-----1 </pre> | <p style="text-align: center;">44/</p> <pre> 64-----48-----32-----16 60 44 28 12 63 56 47 40 31 24 15 8 59 52--43--36--27--20--11--4 62 55 46 39 30 23 14 7 58 51 42 35 26 19 10 3 61-54- 45-38- 29-22- 13 6 57 50 41 34 25 18 9 2 53 37 21 5 49-----33-----17-----1 </pre> | <p style="text-align: center;">45/</p> <pre> 64-----60-----56-----52 63 59 55 51 48 62 44 58 40 54 36 50 47 61--43--57--39--53--35--49 32 46 28 42 24 38 20 34 31 45 27 41 23 37 19 33 16-30- 12-26- 8-22- 4 18 15 29 11 25 7 21 3 17 14 10 6 2 13-----9-----5-----1 </pre> |
| <p style="text-align: center;">46/</p> <pre> 64-----63-----62-----61 60 59 58 57 48 56 47 55 46 54 45 53 44 52--43--51--42--50--41--49 32 40 31 39 30 38 29 37 28 36 27 35 26 34 25 33 16-24- 15-23- 14-22- 13 21 12 20 11 19 10 18 9 17 8 7 6 5 4-----3-----2-----1 </pre> | <p style="text-align: center;">47/</p> <pre> 64-----60-----56-----52 48 44 40 36 63 32 59 28 55 24 51 20 47 16--43--12--39--8--35--4 62 31 58 27 54 23 50 19 46 15 42 11 38 7 34 3 61-30- 57-26- 53-22- 49 18 45 14 41 10 37 6 33 2 29 25 21 17 13-----9-----5-----1 </pre> | <p style="text-align: center;">48/</p> <pre> 64-----63-----62-----61 48 47 46 45 60 32 59 31 58 30 57 29 44 16--43--15--42--14--41--13 56 28 55 27 54 26 53 25 40 12 39 11 38 10 37 9 52-24- 51-23- 50-22- 49 21 36 8 35 7 34 6 33 5 20 19 18 17 4-----3-----2-----1 </pre> |

[Count = 48] [OK!]

#2. Why do we have to deal with the 'Primitive Solutions' of our Object?

I have learned a lot from my experience that we had better deal with the primitive solutions whenever we discuss about the structure of solution set, any transformation method and the factors of total count of solutions. The truth might sometimes have been hidden by the Normalization.

In order to discover the truth we must do our best, however heavy it should be for us to deal with the awful data 48 times as many as the standard solutions.

#3. Let's have the Basic Data of our 'Composite & Pan-triagonal' MC4.

First of all let me present the list of 'Primitive Solutions' of our object here.

*** 'Composite & Pan-triagonal' Magic Cubes of Order 4 ***
 ** Compact List of Primitive Solutions Pre-normalized **

1/

```

1-----56-----25-----48
|64      |9      |40     |17
62  2  11 55  38 26  19 47
| 3 63--+54--10--+27--39--+46--18
7  61 | 50 12 | 31 37 | 42 20 |
|58  4 |15 53 |34 28 |23 45
60-- 8--|13--49--|36--32--|21 41 |
5  57  52 16  29 33  44 24
59 | 14 | 35 | 22 |
6-----51-----30-----43

```

121/

```

1-----56-----25-----48
|63      |10     |39     |18
62  2  11 55  38 26  19 47
| 4 64--+53-- 9--+28--40--+45--17
7  61 | 50 12 | 31 37 | 42 20 |
|57  3 |16 54 |33 27 |24 46
60-- 8--|13--49--|36--32--|21 41 |
6  58  51 15  30 34  43 23
59 | 14 | 35 | 22 |
5-----52-----29-----44

```

241/

```

1-----56-----25-----48
|62      |11     |38     |19
63  3  10 54  39 27  18 46
| 4 64--+53-- 9--+28--40--+45--17
6  61 | 51 12 | 30 37 | 43 20 |
|57  2 |16 55 |33 26 |24 47
60-- 8--|13--49--|36--32--|21 41 |
7  59  50 14  31 35  42 22
58 | 15 | 34 | 23 |
5-----52-----29-----44

```

361/

```

1-----56-----25-----48
|60      |13     |36     |21
63  5  10 52  39 29  18 44
| 6 64--+51-- 9--+30--40--+43--17
4  59 | 53 14 | 28 35 | 45 22 |
|57  2 |16 55 |33 26 |24 47
62-- 8--|11--49--|38--32--|19 41 |
7  61  50 12  31 37  42 20
58 | 15 | 34 | 23 |
3-----54-----27-----46

```

481/

```

1-----60-----21-----48
|56      |13     |36     |25
63  9  6  52  43 29  18 40
|10 64--+51-- 5--+30--44--+39--17
4  55 | 57 14 | 24 35 | 45 26 |
|53  2 |16 59 |33 22 |28 47
62--12--| 7--49--|42--32--|19 37 |
11 61  50 8  31 41  38 20
54 | 15 | 34 | 27 |
3-----58-----23-----46

```

601/

```

1-----60-----13-----56
|48      |21     |36     |25
63 17  6  44  51 29  10 40
|18 64--+43-- 5--+30--52--+39-- 9
4  47 | 57 22 | 16 35 | 53 26 |
|45  2 |24 59 |33 14 |28 55
62--20--| 7--41--|50--32--|11 37 |
19 61  42 8  31 49  38 12
46 | 23 | 34 | 27 |
3-----58-----15-----54

```

721/

```

1-----56-----41-----32
|64      |9      |24     |33
62  2  11 55  22 42  35 31
| 3 63--+54--10--+43--23--+30--34
7  61 | 50 12 | 47 21 | 26 36 |
|58  4 |15 53 |48 44 |39 29
60-- 8--|13--49--|20--48--|37 25 |
5  57  52 16  45 17  28 40
59 | 14 | 19 | 38 |
6-----51-----46-----27

```

841/

```

1-----56-----41-----32
|63      |10     |23     |34
62  2  11 55  22 42  35 31
| 4 64--+53-- 9--+44--24--+29--33
7  61 | 50 12 | 47 21 | 26 36 |
|57  3 |16 54 |17 43 |40 30
60-- 8--|13--49--|20--48--|37 25 |
6  58  51 15  46 18  27 39
59 | 14 | 19 | 38 |
5-----52-----45-----28

```

961/

```

1-----56-----41-----32
|62      |11     |22     |35
63  3  10 54  23 43  34 30
| 4 64--+53-- 9--+44--24--+29--33
6  61 | 51 12 | 46 21 | 27 36 |
|57  2 |16 55 |17 42 |40 31
60-- 8--|13--49--|20--48--|37 25 |
7  59  50 14  47 19  26 38
58 | 15 | 18 | 39 |
5-----52-----45-----28

```

1081/

```

1-----56-----41-----32
|60      |13     |20     |37
63  5  10 52  23 45  34 28
| 6 64--+51-- 9--+46--24--+27--33
4  59 | 53 14 | 44 19 | 29 38 |
|57  2 |16 55 |17 42 |40 31
62-- 8--|11--49--|22--48--|35 25 |
7  61  50 12  47 21  26 36
58 | 15 | 18 | 39 |
3-----54-----43-----30

```

1201/

```

1-----60-----37-----32
|56      |13     |20     |41
63  9  6  52  27 45  34 24
|10 64--+51-- 5--+46--28--+23--33
4  55 | 57 14 | 40 19 | 29 42 |
|53  2 |16 59 |17 38 |44 31
62--12--| 7--49--|26--48--|35 21 |
11 61  50 8  47 25  22 36
54 | 15 | 18 | 43 |
3-----58-----39-----30

```

1321/

```

1-----60-----13-----56
|32      |37     |20     |41
63 33  6  28  51 45  10 24
|34 64--+27-- 5--+46--52--+23-- 9
4  31 | 57 38 | 16 19 | 53 42 |
|29  2 |40 59 |17 14 |44 55
62--36--| 7--25--|50--48--|11 21 |
35 61  26 8  47 49  22 12
30 | 39 | 18 | 43 |
3-----58-----15-----54

```

1441/

```

1-----48-----49-----32
|64      |17     |16     |33
62  2  19 47  14 50  35 31
| 3 63--+46--18--+51--15--+30--34
7  61 | 42 20 | 55 13 | 26 36 |
|58  4 |23 45 |10 52 |39 29
60-- 8--|21--41--|12--56--|37 25 |
5  57  44 24  53 9  28 40
59 | 22 | 11 | 38 |
6-----43-----54-----27

```

1561/

```

1-----48-----49-----32
|63      |18     |15     |34
62  2  19 47  14 50  35 31
| 4 64--+45--17--+52--16--+29--33
7  61 | 42 20 | 55 13 | 26 36 |
|57  3 |24 46 | 9 51 |40 30
60-- 8--|21--41--|12--56--|37 25 |
6  58  43 23  54 10  27 39
59 | 22 | 11 | 38 |
5-----44-----53-----28

```

1681/

```

1-----48-----49-----32
|62      |19     |14     |35
63  3  18 46  15 51  34 30
| 4 64--+45--17--+52--16--+29--33
6  61 | 43 20 | 54 13 | 27 36 |
|57  2 |24 47 | 9 50 |40 31
60-- 8--|21--41--|12--56--|37 25 |
7  59  42 22  55 11  26 38
58 | 23 | 10 | 39 |
5-----44-----53-----28

```

1801/

```

1-----48-----49-----32
|60      |21     |12     |37
63  5  18 44  15 53  34 28
| 6 64--+43--17--+54--16--+27--33
4  59 | 45 22 | 52 11 | 29 38 |
|57  2 |24 47 | 9 50 |40 31
62-- 8--|19--41--|14--56--|35 25 |
7  61  42 20  55 13  26 36
58 | 23 | 10 | 39 |
3-----46-----51-----30

```

1921/

```

1-----60-----37-----32
|48      |21     |12     |49
63 17  6  44  27 53  34 16
|18 64--+43-- 5--+54--28--+15--33
4  47 | 57 22 | 40 11 | 29 50 |
|45  2 |24 59 | 9 38 |52 31
62--20--| 7--41--|26--56--|35 13 |
19 61  42 8  55 25  14 36
46 | 23 | 10 | 51 |
3-----58-----39-----30

```

2041/

```

1-----60-----21-----48
|32      |37     |12     |49
63 33  6  28  43 53  18 16
|34 64--+27-- 5--+54--44--+15--17
4  31 | 57 38 | 24 11 | 45 50 |
|29  2 |40 59 | 9 22 |52 47
62--36--| 7--25--|42--56--|19 13 |
35 61  26 8  55 41  14 20
30 | 39 | 10 | 51 |
3-----58-----23-----46

```

2161/

```

1-----48-----49-----32
|64      |17     |16     |33
62  2  19 47  14 50  35 31
| 3 63--+46--18--+51--15--+30--34
11 61 | 38 20 | 59 13 | 22 36 |
|54  4 |27 45 | 6 52 |43 29
56--12--|25--37--| 8--60--|41 21 |
9  53  40 28  57 5  24 44
55 | 26 | 7 | 42 |
10-----39-----58-----23

```

2281/

```

1-----48-----49-----32
|63      |18     |15     |34
62  2  19 47  14 50  35 31
| 4 64--+45--17--+52--16--+29--33
11 61 | 38 20 | 59 13 | 22 36 |
|53  3 |28 46 | 5 51 |44 30
56--12--|25--37--| 8--60--|41 21 |
10 54  39 27  58 6  23 43
55 | 26 | 7 | 42 |
9-----40-----57-----24

```

2401/

```

1-----48-----49-----32
|62      |19     |14     |35
63  3  18 46  15 51  34 30
| 4 64--+45--17--+52--16--+29--33
10 61 | 39 20 | 58 13 | 23 36 |
|53  2 |28 47 | 5 50 |44 31
56--12--|25--37--| 8--60--|41 21 |
11 55  38 26  59 7  22 42
54 | 27 | 6 | 43 |
9-----40-----57-----24

```

2521/
 1-----48-----49-----32
 |56 |25 | 8 |41
 63 9 18 40 15 57 34 24
 |10 64--+39-17--+58-16--+23-33
 4 55 | 45 26 | 52 7 | 29 42 |
 |53 2 |28 47 | 5 50 |44 31
 62--12--|19--37--|14--60--|35 21 |
 11 61 38 20 59 13 22 36
 54 | 27 | 6 | 43 |
 3-----46-----51-----30

2641/
 1-----56-----41-----32
 |48 |25 | 8 |49
 63 17 10 40 23 57 34 16
 |18 64--+39-9--+58-24--+15-33
 4 47 | 53 26 | 44 7 | 29 50 |
 |45 2 |28 55 | 5 42 |52 31
 62--20--|11--37--|22--60--|35 13 |
 19 61 38 12 59 21 14 36
 46 | 27 | 6 | 51 |
 3-----54-----43-----30

2761/
 1-----56-----25-----48
 |32 |41 | 8 |49
 63 33 10 24 39 57 18 16
 |34 64--+23-9--+58-40--+15-17
 4 31 | 53 42 | 28 7 | 45 50 |
 |29 2 |44 55 | 5 26 |52 47
 62--36--|11--21--|38--60--|19 13 |
 35 61 22 12 59 37 14 20
 30 | 43 | 6 | 51 |
 3-----54-----27-----46

2881/
 1-----48-----49-----32
 |64 |17 |16 |33
 60 2 21 47 12 50 37 31
 | 5 63--+44-18--+53-15--+28-34
 13 59 | 36 22 | 61 11 | 20 38 |
 |52 6 |29 43 | 4 54 |45 27
 56--14--|25--35--| 8--62--|41 19 |
 9 51 40 30 57 3 24 46
 55 | 26 | 7 | 42 |
 10-----39-----58-----23

3001/
 1-----48-----49-----32
 |63 |18 |15 |34
 60 2 21 47 12 50 37 31
 | 6 64--+43-17--+54-16--+27-33
 13 59 | 36 22 | 61 11 | 20 38 |
 |51 5 |30 44 | 3 53 |46 28
 56--14--|25--35--| 8--62--|41 19 |
 10 52 39 29 58 4 23 45
 55 | 26 | 7 | 42 |
 9-----40-----57-----24

3121/
 1-----48-----49-----32
 |60 |21 |12 |37
 63 5 18 44 15 53 34 28
 | 6 64--+43-17--+54-16--+27-33
 10 59 | 39 22 | 58 11 | 23 38 |
 |51 2 |30 47 | 3 50 |46 31
 56--14--|25--35--| 8--62--|41 19 |
 13 55 36 26 61 7 20 42
 52 | 29 | 4 | 45 |
 9-----40-----57-----24

3241/
 1-----48-----49-----32
 |56 |25 | 8 |41
 63 9 18 40 15 57 34 24
 |10 64--+39-17--+58-16--+23-33
 6 55 | 43 26 | 54 7 | 27 42 |
 |51 2 |30 47 | 3 50 |46 31
 60--14--|21--35--|12--62--|37 19 |
 13 59 36 22 61 11 20 38
 52 | 29 | 4 | 45 |
 5-----44-----53-----28

3361/
 1-----56-----41-----32
 |48 |25 | 8 |49
 63 17 10 40 23 57 34 16
 |18 64--+39-9--+58-24--+15-33
 6 47 | 51 26 | 46 7 | 27 50 |
 |43 2 |30 55 | 3 42 |54 31
 60--22--|13--35--|20--62--|37 11 |
 21 59 36 14 61 19 12 38
 44 | 29 | 4 | 53 |
 5-----52-----45-----28

3481/
 1-----56-----25-----48
 |32 |41 | 8 |49
 63 33 10 24 39 57 18 16
 |34 64--+23-9--+58-40--+15-17
 6 31 | 51 42 | 30 7 | 43 50 |
 |27 2 |46 55 | 3 26 |54 47
 60--38--|13--19--|36--62--|21 11 |
 37 59 20 14 61 35 12 22
 28 | 45 | 4 | 53 |
 5-----52-----29-----44

3601/
 1-----48-----49-----32
 |64 |17 |16 |33
 60 3 21 46 12 51 37 30
 | 5 62--+44-19--+53-14--+28-35
 13 58 | 36 23 | 61 10 | 20 39 |
 |52 7 |29 42 | 4 55 |45 26
 56--15--|25--34--| 8--63--|41 18 |
 9 50 40 31 57 2 24 47
 54 | 27 | 6 | 43 |
 11-----38-----59-----22

3721/
 1-----48-----49-----32
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 60 3 21 46 12 51 37 30
 | 7 64--+42-17--+55-16--+26-33
 13 58 | 36 23 | 61 10 | 20 39 |
 |50 5 |31 44 | 2 53 |47 28
 56--15--|25--34--| 8--63--|41 18 |
 11 52 38 29 59 4 22 45
 54 | 27 | 6 | 43 |
 9-----40-----57-----24

3841/
 1-----48-----49-----32
 |60 |21 |12 |37
 62 5 19 44 14 53 35 28
 | 7 64--+42-17--+55-16--+26-33
 11 58 | 38 23 | 59 10 | 22 39 |
 |50 3 |31 46 | 2 51 |47 30
 56--15--|25--34--| 8--63--|41 18 |
 13 54 36 27 61 6 20 43
 52 | 29 | 4 | 45 |
 9-----40-----57-----24

3961/
 1-----48-----49-----32
 |56 |25 | 8 |41
 62 9 19 40 14 57 35 24
 |11 64--+38-17--+59-16--+22-33
 7 54 | 42 27 | 55 6 | 26 43 |
 |50 3 |31 46 | 2 51 |47 30
 60--15--|21--34--|12--63--|37 18 |
 13 58 36 23 61 10 20 39
 52 | 29 | 4 | 45 |
 5-----44-----53-----28

4081/
 1-----56-----41-----32
 |48 |25 | 8 |49
 62 17 11 40 22 57 35 16
 |19 64--+38-9--+59-24--+14-33
 7 46 | 50 27 | 47 6 | 26 51 |
 |42 3 |31 54 | 2 43 |55 30
 60--23--|13--34--|20--63--|37 10 |
 21 58 36 15 61 18 12 39
 44 | 29 | 4 | 53 |
 5-----52-----45-----28

4201/
 1-----56-----25-----48
 |32 |41 | 8 |49
 62 33 11 24 38 57 19 16
 |35 64--+22-9--+59-40--+14-17
 7 30 | 50 43 | 31 6 | 42 51 |
 |26 3 |47 54 | 2 27 |55 46
 60--39--|13--18--|36--63--|21 10 |
 37 58 20 15 61 34 12 23
 28 | 45 | 4 | 53 |
 5-----52-----29-----44

4321/
 1-----48-----49-----32
 |63 |18 |15 |34
 60 4 21 45 12 52 37 29
 | 6 62--+43-19--+54-14--+27-35
 13 57 | 36 24 | 61 9 | 20 40 |
 |51 7 |30 42 | 3 55 |46 26
 56--16--|25--33--| 8--64--|41 17 |
 10 50 39 31 58 2 23 47
 53 | 28 | 5 | 44 |
 11-----38-----59-----22

4441/
 1-----48-----49-----32
 |62 |19 |14 |35
 60 4 21 45 12 52 37 29
 | 7 63--+42-18--+55-15--+26-34
 13 57 | 36 24 | 61 9 | 20 40 |
 |50 6 |31 43 | 2 54 |47 27
 56--16--|25--33--| 8--64--|41 17 |
 11 51 38 30 59 3 22 46
 53 | 28 | 5 | 44 |
 10-----39-----58-----23

4561/
 1-----48-----49-----32
 |60 |21 |12 |37
 62 6 19 43 14 54 35 27
 | 7 63--+42-18--+55-15--+26-34
 11 57 | 38 24 | 59 9 | 22 40 |
 |50 4 |31 45 | 2 52 |47 29
 56--16--|25--33--| 8--64--|41 17 |
 13 53 36 28 61 5 20 44
 51 | 30 | 3 | 46 |
 10-----39-----58-----23

4681/
 1-----48-----49-----32
 |56 |25 | 8 |41
 62 10 19 39 14 58 35 23
 |11 63--+38-18--+59-15--+22-34
 7 53 | 42 28 | 55 5 | 26 44 |
 |50 4 |31 45 | 2 52 |47 29
 60--16--|21--33--|12--64--|37 17 |
 13 57 36 24 61 9 20 40
 51 | 30 | 3 | 46 |
 6-----43-----54-----27

4801/
 1-----56-----41-----32
 |48 |25 | 8 |49
 62 18 11 39 22 58 35 15
 |19 63--+38-10--+59-23--+14-34
 7 45 | 50 28 | 47 5 | 26 52 |
 |42 4 |31 53 | 2 44 |55 29
 60--24--|13--33--|20--64--|37 9 |
 21 57 36 16 61 17 12 40
 43 | 30 | 3 | 54 |
 6-----51-----46-----27

4921/
 1-----56-----25-----48
 |32 |41 | 8 |49
 62 34 11 23 38 58 19 15
 |35 63--+22-10--+59-39--+14-18
 7 29 | 50 44 | 31 5 | 42 52 |
 |26 4 |47 53 | 2 28 |55 45
 60--40--|13--17--|36--64--|21 9 |
 37 57 20 16 61 33 12 24
 27 | 46 | 3 | 54 |
 6-----51-----30-----43

5041/
 2-----55-----26-----47
 |64 | 9 |40 |17
 61 1 12 56 37 25 20 48
 | 3 63--54--10--27--39--46--18
 8 62 | 49 11 | 32 38 | 41 19 |
 |58 4 |15 53 |34 28 |23 45
 59-- 7--|14--50--|35--31--|22 42 |
 5 57 52 16 29 33 44 24
 60 | 13 | 36 | 21 |
 6-----51-----30-----43

10081/
 3-----54-----27-----46
 |64 | 9 |40 |17
 61 1 12 56 37 25 20 48
 | 2 62--55--11--26--38--47--19
 8 63 | 49 10 | 32 39 | 41 18 |
 |59 4 |14 53 |35 28 |22 45
 58-- 6--|15--51--|34--30--|23 43 |
 5 57 52 16 29 33 44 24
 60 | 13 | 36 | 21 |
 7-----50-----31-----42

15121/
 4-----53-----28-----45
 |63 |10 |39 |18
 61 1 12 56 37 25 20 48
 | 2 62--55--11--26--38--47--19
 8 64 | 49 9 | 32 40 | 41 17 |
 |59 3 |14 54 |35 27 |22 46
 57-- 5--|16--52--|33--29--|24 44 |
 6 58 51 15 30 34 43 23
 60 | 13 | 36 | 21 |
 7-----50-----31-----42

20161/
 5-----52-----29-----44
 |64 | 9 |40 |17
 59 1 14 56 35 25 22 48
 | 2 60--55--13--26--36--47--21
 8 63 | 49 10 | 32 39 | 41 18 |
 |61 6 |12 51 |37 30 |20 43
 58-- 4--|15--53--|34--28--|23 45 |
 3 57 54 16 27 33 46 24
 62 | 11 | 38 | 19 |
 7-----50-----31-----42

25201/
 6-----51-----30-----43
 |63 |10 |39 |18
 59 1 14 56 35 25 22 48
 | 2 60--55--13--26--36--47--21
 8 64 | 49 9 | 32 40 | 41 17 |
 |61 5 |12 52 |37 29 |20 44
 57-- 3--|16--54--|33--27--|24 46 |
 4 58 53 15 28 34 45 23
 62 | 11 | 38 | 19 |
 7-----50-----31-----42

30241/
 7-----50-----31-----42
 |62 |11 |38 |19
 58 1 15 56 34 25 23 48
 | 3 60--54--13--27--36--46--21
 8 64 | 49 9 | 32 40 | 41 17 |
 |61 5 |12 52 |37 29 |20 44
 57-- 2--|16--55--|33--26--|24 47 |
 4 59 53 14 28 35 45 22
 63 | 10 | 39 | 18 |
 6-----51-----30-----43

35281/
 8-----49-----32-----41
 |61 |12 |37 |20
 58 2 15 55 34 26 23 47
 | 3 59--54--14--27--35--46--22
 7 64 | 50 9 | 31 40 | 42 17 |
 |62 5 |11 52 |38 29 |19 44
 57-- 1--|16--56--|33--25--|24 48 |
 4 60 53 13 28 36 45 21
 63 | 10 | 39 | 18 |
 6-----51-----30-----43

40321/
 9-----52-----29-----40
 |64 | 5 |44 |17
 55 1 14 60 35 21 26 48
 | 2 56--59--13--22--36--47--25
 12 63 | 49 6 | 32 43 | 37 18 |
 |61 10 | 8 51 |41 30 |20 39
 54-- 4--|15--57--|34--24--|27 45 |
 3 53 58 16 23 33 46 28
 62 | 7 | 42 | 19 |
 11-----50-----31-----38

45361/
 10-----51-----30-----39
 |63 | 6 |43 |18
 55 1 14 60 35 21 26 48
 | 2 56--59--13--22--36--47--25
 12 64 | 49 5 | 32 44 | 37 17 |
 |61 9 | 8 52 |41 29 |20 40
 53-- 3--|16--58--|33--23--|28 46 |
 4 54 57 15 24 34 45 27
 62 | 7 | 42 | 19 |
 11-----50-----31-----38

50401/
 11-----50-----31-----38
 |62 | 7 |42 |19
 54 1 15 60 34 21 27 48
 | 3 56--58--13--23--36--46--25
 12 64 | 49 5 | 32 44 | 37 17 |
 |61 9 | 8 52 |41 29 |20 40
 53-- 2--|16--59--|33--22--|28 47 |
 4 55 57 14 24 35 45 26
 63 | 6 | 43 | 18 |
 10-----51-----30-----39

55441/
 12-----49-----32-----37
 |61 | 8 |41 |20
 54 2 15 59 34 22 27 47
 | 3 55--58--14--23--35--46--26
 11 64 | 50 5 | 31 44 | 38 17 |
 |62 9 | 7 52 |42 29 |19 40
 53-- 1--|16--60--|33--21--|28 48 |
 4 56 57 13 24 36 45 25
 63 | 6 | 43 | 18 |
 10-----51-----30-----39

60481/
 13-----50-----31-----36
 |60 | 7 |42 |21
 52 1 15 62 34 19 29 48
 | 5 56--58--11--23--38--44--25
 14 64 | 49 3 | 32 46 | 35 17 |
 |59 9 | 8 54 |41 27 |22 40
 51-- 2--|16--61--|33--20--|30 47 |
 6 55 57 12 24 37 43 26
 63 | 4 | 45 | 18 |
 10-----53-----28-----39

65521/
 14-----49-----32-----35
 |59 | 8 |41 |22
 52 2 15 61 34 20 29 47
 | 5 55--58--12--23--37--44--26
 13 64 | 50 3 | 31 46 | 36 17 |
 |60 9 | 7 54 |42 27 |21 40
 51-- 1--|16--62--|33--19--|30 48 |
 6 56 57 11 24 38 43 25
 63 | 4 | 45 | 18 |
 10-----53-----28-----39

70561/
 15-----49-----32-----34
 |58 | 8 |41 |23
 52 3 14 61 35 20 29 46
 | 5 54--59--12--22--37--44--27
 13 64 | 51 2 | 30 47 | 36 17 |
 |60 9 | 6 55 |43 26 |21 40
 50-- 1--|16--63--|33--18--|31 48 |
 7 56 57 10 24 39 42 25
 62 | 4 | 45 | 19 |
 11-----53-----28-----38

75601/
 16-----49-----32-----33
 |57 | 8 |41 |24
 51 4 14 61 35 20 30 45
 | 6 53--59--12--22--37--43--28
 13 63 | 52 2 | 29 47 | 36 18 |
 |60 10 | 5 55 |44 26 |21 39
 50-- 1--|15--64--|34--17--|31 48 |
 7 56 58 9 23 40 42 25
 62 | 3 | 46 | 19 |
 11-----54-----27-----38

80641/
 17-----44-----29-----40
 |64 | 5 |52 | 9
 47 1 22 60 35 13 26 56
 | 2 48--59--21--14--36--55--25
 20 63 | 41 6 | 32 51 | 37 10 |
 |61 18 | 8 43 |49 30 |12 39
 46-- 4--|23--57--|34--16--|27 53 |
 3 45 58 24 15 33 54 28
 62 | 7 | 50 | 11 |
 19-----42-----31-----38

85681/
 18-----43-----30-----39
 |63 | 6 |51 |10
 47 1 22 60 35 13 26 56
 | 2 48--59--21--14--36--55--25
 20 64 | 41 5 | 32 52 | 37 9 |
 |61 17 | 8 44 |49 29 |12 40
 45-- 3--|24--58--|33--15--|28 54 |
 4 46 57 23 16 34 53 27
 62 | 7 | 50 | 11 |
 19-----42-----31-----38

90721/
 19-----42-----31-----38
 |62 | 7 |50 |11
 46 1 23 60 34 13 27 56
 | 3 48--58--21--15--36--54--25
 20 64 | 41 5 | 32 52 | 37 9 |
 |61 17 | 8 44 |49 29 |12 40
 45-- 2--|24--59--|33--14--|28 55 |
 4 47 57 22 16 35 53 26
 63 | 6 | 51 | 10 |
 18-----43-----30-----39

95761/
 20-----41-----32-----37
 |61 | 8 |49 |12
 46 2 23 59 34 14 27 55
 | 3 47--58--22--15--35--54--26
 19 64 | 42 5 | 31 52 | 38 9 |
 |62 17 | 7 44 |50 29 |11 40
 45-- 1--|24--60--|33--13--|28 56 |
 4 48 57 21 16 36 53 25
 63 | 6 | 51 | 10 |
 18-----43-----30-----39

100801/
 21-----42-----31-----36
 |60 | 7 |50 |13
 44 1 23 62 34 11 29 56
 | 5 48--58--19--15--38--52--25
 22 64 | 41 3 | 32 54 | 35 9 |
 |59 17 | 8 46 |49 27 |14 40
 43-- 2--|24--61--|33--12--|30 55 |
 6 47 57 20 16 37 51 26
 63 | 4 | 53 | 10 |
 18-----45-----28-----39

105841/
 22-----41-----32-----35
 |59 | 8 |49 |14
 44 2 23 61 34 12 29 55
 | 5 47--58--20--15--37--52--26
 21 64 | 42 3 | 31 54 | 36 9 |
 |60 17 | 7 46 |50 27 |13 40
 43-- 1--|24--62--|33--11--|30 56 |
 6 48 57 19 16 38 51 25
 63 | 4 | 53 | 10 |
 18-----45-----28-----39

110881/
 23-----41-----32-----34
 |58 | 8 |49 |15
 44 3 22 61 35 12 29 54
 | 5 46--+59-20--+14-37--+52--27
 21 64 | 43 2 | 30 55 | 36 9 |
 |60 17 | 6 47 |51 26 |13 40 |
 42-- 1-|-24--63-|-33--10-|-31 56 |
 7 48 57 18 16 39 50 25
 62 | 4 | 53 | 11 |
 19-----45-----28-----38

115921/
 24-----41-----32-----33
 |57 | 8 |49 |16
 43 4 22 61 35 12 30 53
 | 6 45--+59-20--+14-37--+51--28
 21 63 | 44 2 | 29 55 | 36 10 |
 |60 18 | 5 47 | 52 26 |13 39 |
 42-- 1-|-23--64-|-34-- 9-|-31 56 |
 7 48 58 17 15 40 50 25
 62 | 3 | 54 | 11 |
 19-----46-----27-----38

120961/
 25-----38-----31-----36
 |56 |11 |50 |13
 40 1 27 62 34 7 29 60
 | 9 48--+54-19--+15-42--+52--21
 26 64 | 37 3 | 32 58 | 35 5 |
 |55 17 |12 46 |49 23 |14 44 |
 39-- 2-|-28--61-|-33-- 8-|-30 59 |
 10 47 53 20 16 41 51 22
 63 | 4 | 57 | 6 |
 18-----45-----24-----43

126001/
 26-----37-----32-----35
 |55 |12 |49 |14
 40 2 27 61 34 8 29 59
 | 9 47--+54-20--+15-41--+52--22
 25 64 | 38 3 | 31 58 | 36 5 |
 |56 17 |11 46 |50 23 |13 44 |
 39-- 1-|-28--62-|-33-- 7-|-30 60 |
 10 48 53 19 16 42 51 21
 63 | 4 | 57 | 6 |
 18-----45-----24-----43

131041/
 27-----37-----32-----34
 |54 |12 |49 |15
 40 3 26 61 35 8 29 58
 | 9 46--+55-20--+14-41--+52--23
 25 64 | 39 2 | 30 59 | 36 5 |
 |56 17 |10 47 |51 22 |13 44 |
 38-- 1-|-28--63-|-33-- 6-|-31 60 |
 11 48 53 18 16 43 50 21
 62 | 4 | 57 | 7 |
 19-----45-----24-----42

136081/
 28-----37-----32-----33
 |53 |12 |49 |16
 39 4 26 61 35 8 30 57
 |10 45--+55-20--+14-41--+51--24
 25 63 | 40 2 | 29 59 | 36 6 |
 |56 18 | 9 47 |52 22 |13 43 |
 38-- 1-|-27--64-|-34-- 5-|-31 60 |
 11 48 54 17 15 44 50 21
 62 | 3 | 58 | 7 |
 19-----46-----23-----42

141121/
 29-----35-----32-----34
 |52 |14 |49 |15
 40 5 26 59 37 8 27 58
 | 9 44--+55-22--+12-41--+54--23
 25 64 | 39 2 | 28 61 | 38 3 |
 |56 17 |10 47 |53 20 |11 46 |
 36-- 1-|-30--63-|-33-- 4-|-31 62 |
 13 48 51 18 16 45 50 19
 60 | 6 | 57 | 7 |
 21-----43-----24-----42

146161/
 30-----35-----32-----33
 |51 |14 |49 |16
 39 6 26 59 37 8 28 57
 |10 43--+55-22--+12-41--+53--24
 25 63 | 40 2 | 27 61 | 38 4 |
 |56 18 | 9 47 | 54 20 |11 45 |
 36-- 1-|-29--64-|-34-- 3-|-31 62 |
 13 48 52 17 15 46 50 19
 60 | 5 | 58 | 7 |
 21-----44-----23-----42

151201/
 31-----34-----32-----33
 |50 |15 |49 |16
 38 7 27 58 37 8 28 57
 |11 42--+54-23--+12-41--+53--24
 25 62 | 40 3 | 26 61 | 39 4 |
 |56 19 | 9 46 |55 20 |10 45 |
 36-- 1-|-29--64-|-35-- 2-|-30 63 |
 13 48 52 17 14 47 51 18
 60 | 5 | 59 | 6 |
 21-----44-----22-----43

156241/
 32-----34-----31-----33
 |49 |15 |50 |16
 37 8 27 58 38 7 28 57
 |12 41--+54-23--+11-42--+53--24
 26 61 | 40 3 | 25 62 | 39 4 |
 |55 20 | 9 46 |56 19 |10 45 |
 35-- 2-|-29--64-|-36-- 1-|-30 63 |
 14 47 52 17 13 48 51 18
 59 | 5 | 60 | 6 |
 22-----44-----21-----43

161281/
 33-----28-----45-----24
 |64 | 5 |52 | 9
 31 1 38 60 19 13 42 56
 | 2 32--+59-37--+14-20--+55--41
 36 63 | 25 6 | 48 51 | 21 10 |
 |61 34 | 8 27 |49 46 |12 23 |
 30-- 4-|-39--57-|-18--16-|-43 53 |
 3 29 58 40 15 17 54 44
 62 | 7 | 50 | 11 |
 35-----26-----47-----22

166321/
 34-----27-----46-----23
 |63 | 6 |51 |10
 31 1 38 60 19 13 42 56
 | 2 32--+59-37--+14-20--+55--41
 36 64 | 25 5 | 48 52 | 21 9 |
 |61 33 | 8 28 |49 45 |12 24 |
 29-- 3-|-40--58-|-17--15-|-44 54 |
 4 30 57 39 16 18 53 43
 62 | 7 | 50 | 11 |
 35-----26-----47-----22

171361/
 35-----26-----47-----22
 |62 | 7 |50 |11
 30 1 39 60 18 13 43 56
 | 3 32--+58-37--+15-20--+54--41
 36 64 | 25 5 | 48 52 | 21 9 |
 |61 33 | 8 28 |49 45 |12 24 |
 29-- 2-|-40--59-|-17--14-|-44 55 |
 4 31 57 38 16 19 53 42
 63 | 6 | 51 | 10 |
 34-----27-----46-----23

176401/
 36-----25-----48-----21
 |61 | 8 |49 |12
 30 2 39 59 18 14 43 55
 | 3 31--+58-38--+15-19--+54--42
 35 64 | 26 5 | 47 52 | 22 9 |
 |62 33 | 7 28 | 50 45 |11 24 |
 29-- 1-|-40--60-|-17--13-|-44 56 |
 4 32 57 37 16 20 53 41
 63 | 6 | 51 | 10 |
 34-----27-----46-----23

181441/
 37-----26-----47-----20
 |60 | 7 |50 |13
 28 1 39 62 18 11 45 56
 | 5 32--+58-35--+15-22--+52--41
 38 64 | 25 3 | 48 54 | 19 9 |
 |59 33 | 8 30 |49 43 |14 24 |
 27-- 2-|-40--61-|-17--12-|-46 55 |
 6 31 57 36 16 21 51 42
 63 | 4 | 53 | 10 |
 34-----29-----44-----23

186481/
 38-----25-----48-----19
 |59 | 8 |49 |14
 28 2 39 61 18 12 45 55
 | 5 31--+58-36--+15-21--+52--42
 37 64 | 26 3 | 47 54 | 20 9 |
 |60 33 | 7 30 |50 43 |13 24 |
 27-- 1-|-40--62-|-17--11-|-46 56 |
 6 32 57 35 16 22 51 41
 63 | 4 | 53 | 10 |
 34-----29-----44-----23

191521/
 39-----25-----48-----18
 |58 | 8 |49 |15
 28 3 38 61 19 12 45 54
 | 5 30--+59-36--+14-21--+52--43
 37 64 | 27 2 | 46 55 | 20 9 |
 |60 33 | 6 31 |51 42 |13 24 |
 26-- 1-|-40--63-|-17--10-|-47 56 |
 7 32 57 34 16 23 50 41
 62 | 4 | 53 | 11 |
 35-----29-----44-----22

196561/
 40-----25-----48-----17
 |57 | 8 |49 |16
 27 4 38 61 19 12 46 53
 | 6 29--+59-36--+14-21--+51--44
 37 63 | 28 2 | 45 55 | 20 10 |
 |60 34 | 5 31 |52 42 |13 23 |
 26-- 1-|-39--64-|-18-- 9-|-47 56 |
 7 32 58 33 15 24 50 41
 62 | 3 | 54 | 11 |
 35-----30-----43-----22

201601/
 41-----22-----47-----20
 |56 |11 |50 |13
 24 1 43 62 18 7 45 60
 | 9 32--+54-35--+15-26--+52--37
 42 64 | 21 3 | 48 58 | 19 5 |
 |55 33 |12 30 |49 39 |14 28 |
 23-- 2-|-44--61-|-17-- 8-|-46 59 |
 10 31 53 36 16 25 51 38
 63 | 4 | 57 | 6 |
 34-----29-----40-----27

206641/
 42-----21-----48-----19
 |55 |12 |49 |14
 24 2 43 61 18 8 45 59
 | 9 31--+54-36--+15-25--+52--38
 41 64 | 22 3 | 47 58 | 20 5 |
 |56 33 |11 30 |50 39 |13 28 |
 23-- 1-|-44--62-|-17-- 7-|-46 60 |
 10 32 53 35 16 26 51 37
 63 | 4 | 57 | 6 |
 34-----29-----40-----27

211681/
 43-----21-----48-----18
 |54 |12 |49 |15
 24 3 42 61 19 8 45 58
 | 9 30--+55-36--+14-25--+52--39
 41 64 | 23 2 | 46 59 | 20 5 |
 |56 33 |10 31 |51 38 |13 28 |
 22-- 1-|-44--63-|-17-- 6-|-47 60 |
 11 32 53 34 16 27 50 37
 62 | 4 | 57 | 7 |
 35-----29-----40-----26

216721/
 44-----21-----48-----17
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 23 4 42 61 19 8 46 57
 |10 29--45-36--14-25--51-40
 41 63 | 24 2 | 45 59 | 20 6 |
 |56 34 | 9 31 | 52 38 | 13 27
 22-- 1-|43-64-|18-- 5-|47 60 |
 11 32 54 33 15 28 50 37
 62 | 3 | 58 | 7 |
 35-----30-----39-----26

221761/
 45-----19-----48-----18
 |52 |14 |49 |15
 24 5 42 59 21 8 43 58
 | 9 28--45-38--12-25--54-39
 41 64 | 23 2 | 44 61 | 22 3 |
 |56 33 | 10 31 | 53 36 | 11 30
 20-- 1-|46-63-|17-- 4-|47 62 |
 13 32 51 34 16 29 50 35
 60 | 6 | 57 | 7 |
 37-----27-----40-----26

226801/
 46-----19-----48-----17
 |51 |14 |49 |16
 23 6 42 59 21 8 44 57
 |10 27--45-38--12-25--53-40
 41 63 | 24 2 | 43 61 | 22 4 |
 |56 34 | 9 31 | 54 36 | 11 29
 20-- 1-|45-64-|18-- 3-|47 62 |
 13 32 52 33 15 30 50 35
 60 | 5 | 58 | 7 |
 37-----28-----39-----26

231841/
 47-----18-----48-----17
 |50 |15 |49 |16
 22 7 43 58 21 8 44 57
 |11 26--45-39--12-25--53-40
 41 62 | 24 3 | 42 61 | 23 4 |
 |56 35 | 9 30 | 55 36 | 10 29
 20-- 1-|45-64-|19-- 2-|46 63 |
 13 32 52 33 14 31 51 34
 60 | 5 | 59 | 6 |
 37-----28-----38-----27

236881/
 48-----18-----47-----17
 |49 |15 |50 |16
 21 8 43 58 22 7 44 57
 |12 25--44-39--11-26--53-40
 42 61 | 24 3 | 41 62 | 23 4 |
 |55 36 | 9 30 | 56 35 | 10 29
 19-- 2-|45-64-|20-- 1-|46 63 |
 14 31 52 33 13 32 51 34
 59 | 5 | 60 | 6 |
 38-----28-----37-----27

241921/
 49-----14-----55-----12
 |48 |19 |42 |21
 16 1 51 62 10 7 53 60
 |17 32--46-35--23-26--44-37
 50 64 | 13 3 | 56 58 | 11 5 |
 |47 33 | 20 30 | 41 39 | 22 28
 15-- 2-|52-61-| 9-- 8-|54 59 |
 18 31 45 36 24 25 43 38
 63 | 4 | 57 | 6 |
 34-----29-----40-----27

246961/
 50-----13-----56-----11
 |47 |20 |41 |22
 16 2 51 61 10 8 53 59
 |17 31--46-36--23-25--44-38
 49 64 | 14 3 | 55 58 | 12 5 |
 |48 33 | 19 30 | 42 39 | 21 28
 15-- 1-|52-62-| 9-- 7-|54 60 |
 18 32 45 35 24 26 43 37
 63 | 4 | 57 | 6 |
 34-----29-----40-----27

252001/
 51-----13-----56-----10
 |46 |20 |41 |23
 16 3 50 61 11 8 53 58
 |17 30--47-36--22-25--44-39
 49 64 | 15 2 | 54 59 | 12 5 |
 |48 33 | 18 31 | 43 38 | 21 28
 14-- 1-|52-63-| 9-- 6-|55 60 |
 19 32 45 34 24 27 42 37
 62 | 4 | 57 | 7 |
 35-----29-----40-----26

257041/
 52-----13-----56-----9
 |45 |20 |41 |24
 15 4 50 61 11 8 54 57
 |18 29--47-36--22-25--43-40
 49 63 | 16 2 | 53 59 | 12 6 |
 |48 34 | 17 31 | 44 38 | 21 27
 14-- 1-|51-64-|10-- 5-|55 60 |
 19 32 46 33 23 28 42 37
 62 | 3 | 58 | 7 |
 35-----30-----39-----26

262081/
 53-----11-----56-----10
 |44 |22 |41 |23
 16 5 50 59 13 8 51 58
 |17 28--47-38--20-25--46-39
 49 64 | 15 2 | 52 61 | 14 3 |
 |48 33 | 18 31 | 45 36 | 19 30
 12-- 1-|54-63-| 9-- 4-|55 62 |
 21 32 43 34 24 29 42 35
 60 | 6 | 57 | 7 |
 37-----27-----40-----26

267121/
 54-----11-----56-----9
 |43 |22 |41 |24
 15 6 50 59 13 8 52 57
 |18 27--47-38--20-25--45-40
 49 63 | 16 2 | 51 61 | 14 4 |
 |48 34 | 17 31 | 46 36 | 19 29
 12-- 1-|53-64-|10-- 3-|55 62 |
 21 32 44 33 23 30 42 35
 60 | 5 | 58 | 7 |
 37-----28-----39-----26

272161/
 55-----10-----56-----9
 |42 |23 |41 |24
 14 7 51 58 13 8 52 57
 |19 26--46-39--20-25--45-40
 49 62 | 16 3 | 50 61 | 15 4 |
 |48 35 | 17 30 | 47 36 | 18 29
 12-- 1-|53-64-|11-- 2-|54 63 |
 21 32 44 33 22 31 43 34
 60 | 5 | 59 | 6 |
 37-----28-----38-----27

277201/
 56-----10-----55-----9
 |41 |23 |42 |24
 13 8 51 58 14 7 52 57
 |20 25--46-39--19-26--45-40
 50 61 | 16 3 | 49 62 | 15 4 |
 |47 36 | 17 30 | 48 35 | 18 29
 11-- 2-|53-64-|12-- 1-|54 63 |
 22 31 44 33 21 32 43 34
 59 | 5 | 60 | 6 |
 38-----28-----37-----27

282241/
 57-----7-----60-----6
 |40 |26 |37 |27
 16 9 50 55 13 12 51 54
 |17 24--47-42--20-21--46-43
 49 64 | 15 2 | 52 61 | 14 3 |
 |48 33 | 18 31 | 45 36 | 19 30
 8-- 1-|58-63-| 5-- 4-|59 62 |
 25 32 39 34 28 29 38 35
 56 | 10 | 53 | 11 |
 41-----23-----44-----22

287281/
 58-----7-----60-----5
 |39 |26 |37 |28
 15 10 50 55 13 12 52 53
 |18 23--47-42--20-21--45-44
 49 63 | 16 2 | 51 61 | 14 4 |
 |48 34 | 17 31 | 46 36 | 19 29
 8-- 1-|57-64-| 6-- 3-|59 62 |
 25 32 40 33 27 30 38 35
 56 | 9 | 54 | 11 |
 41-----24-----43-----22

292321/
 59-----6-----60-----5
 |38 |27 |37 |28
 14 11 51 54 13 12 52 53
 |19 22--46-43--20-21--45-44
 49 62 | 16 3 | 50 61 | 15 4 |
 |48 35 | 17 30 | 47 36 | 18 29
 8-- 1-|57-64-| 7-- 2-|58 63 |
 25 32 40 33 26 31 39 34
 56 | 9 | 55 | 10 |
 41-----24-----42-----23

297361/
 60-----6-----59-----5
 |37 |27 |38 |28
 13 12 51 54 14 11 52 53
 |20 21--46-43--19-22--45-44
 50 61 | 16 3 | 49 62 | 15 4 |
 |47 36 | 17 30 | 48 35 | 18 29
 7-- 2-|57-64-| 8-- 1-|58 63 |
 26 31 40 33 25 32 39 34
 55 | 9 | 56 | 10 |
 42-----24-----41-----23

302401/
 61-----4-----62-----3
 |36 |29 |35 |30
 12 13 53 52 11 14 54 51
 |21 20--44-45--22-19--43-46
 49 60 | 16 5 | 50 59 | 15 6 |
 |48 37 | 17 28 | 47 38 | 18 27
 8-- 1-|57-64-| 7-- 2-|58 63 |
 25 32 40 33 26 31 39 34
 56 | 9 | 55 | 10 |
 41-----24-----42-----23

307441/
 62-----4-----61-----3
 |35 |29 |36 |30
 11 14 53 52 12 13 54 51
 |22 19--44-45--21-20--43-46
 50 59 | 16 5 | 49 60 | 15 6 |
 |47 38 | 17 28 | 48 37 | 18 27
 7-- 2-|57-64-| 8-- 1-|58 63 |
 26 31 40 33 25 32 39 34
 55 | 9 | 56 | 10 |
 42-----24-----41-----23

312481/
 63-----4-----61-----2
 |34 |29 |36 |31
 10 15 53 52 12 13 55 50
 |23 18--44-45--21-20--42-47
 51 58 | 16 5 | 49 60 | 14 7 |
 |46 39 | 17 28 | 48 37 | 19 26
 6-- 3-|57-64-| 8-- 1-|59 62 |
 27 30 40 33 25 32 38 35
 54 | 9 | 56 | 11 |
 43-----24-----41-----22

317521/
 64-----3-----61-----2
 |33 |30 |36 |31
 9 16 54 51 12 13 55 50
 |24 17--43-46--21-20--42-47
 52 57 | 15 6 | 49 60 | 14 7 |
 |45 40 | 18 27 | 48 37 | 19 26
 5-- 4-|58-63-| 8-- 1-|59 62 |
 28 29 39 34 25 32 38 35
 53 | 10 | 56 | 11 |
 44-----23-----41-----22


```

2881/      CS|Rw,C1,&P1|Pantriagonals|Composite Fours
1-----48-----49-----32      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|64      17      16      |33      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
60  2  21  47  12  50  37  31      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
| 5  63---44--18---53--15--+28--34 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
13  59 | 36  22  61  11  20  38 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|52  6  29  43  4  54  |45  27 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
56--14-|-25--35--- 8--62---41 19 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  9  51  40  30  57  3  24  46 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    55 |    26      7      42 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      10-----39-----58-----23 |0 0 0 0  |0      |0 0 0 0 0 0 0 0 0 0 0 0

```

```

3601/      CS|Rw,C1,&P1|Pantriagonals|Composite Fours
1-----48-----49-----32      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|64      17      16      |33      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
60  3  21  46  12  51  37  30      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
| 5  62---44--19---53--14--+28--35 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
13  58 | 36  23  61  10  20  39 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|52  7  30  42  4  55  |45  26 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
56--15-|-25--34--- 8--63---41 18 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  9  50  40  31  57  2  24  47 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    54 |    27      6      43 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      11-----38-----59-----22 |0 0 0 0  |0      |0 0 0 0 0 0 0 0 0 0 0 0

```

```

4321/      CS|Rw,C1,&P1|Pantriagonals|Composite Fours
1-----48-----49-----32      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|63      18      15      |34      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
60  4  21  45  12  52  37  29      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
| 6  62---43--19---54--14--+27--35 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
13  57 | 36  24  61  9  20  40 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|51  7  30  42  3  55  |46  26 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
56--16-|-25--33--- 8--64---41 17 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  10  50  39  31  58  2  23  47 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    53 |    28      5      44 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      11-----38-----59-----22 |0 0 0 0  |0      |0 0 0 0 0 0 0 0 0 0 0 0

```

```

5041/      CS|Rw,C1,&P1|Pantriagonals|Composite Fours
2-----55-----26-----47      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|64      9      40      |17      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
61  1  12  56  37  25  20  48      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
| 3  63---54--10---27--39--+46--18 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  62 | 49  11  32  38  41  19 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|58  4  15  53  34  28  |23  45 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
59-- 7-|-14--50---35--31---22 42 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  57  52  16  29  33  44  24 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    60 |    13      36      21 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      6-----51-----30-----43 |0 0 0 0  |0      |0 0 0 0 0 0 0 0 0 0 0 0

```

```

10081/     CS|Rw,C1,&P1|Pantriagonals|Composite Fours
3-----54-----27-----46      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|64      9      40      |17      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
61  1  12  56  37  25  20  48      |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
| 2  62---55--11---26--38--+47--19 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  63 | 49  10  32  39  41  18 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
|59  4  14  53  35  28  |22  45 |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
58-- 6-|-15--51---34--30---23 43 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  57  52  16  29  33  44  24 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    60 |    13      36      21 | |0 0 0 0 0 0|0 0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      7-----50-----31-----42 |0 0 0 0  |0      |0 0 0 0 0 0 0 0 0 0 0 0

```

.....

[OK!]

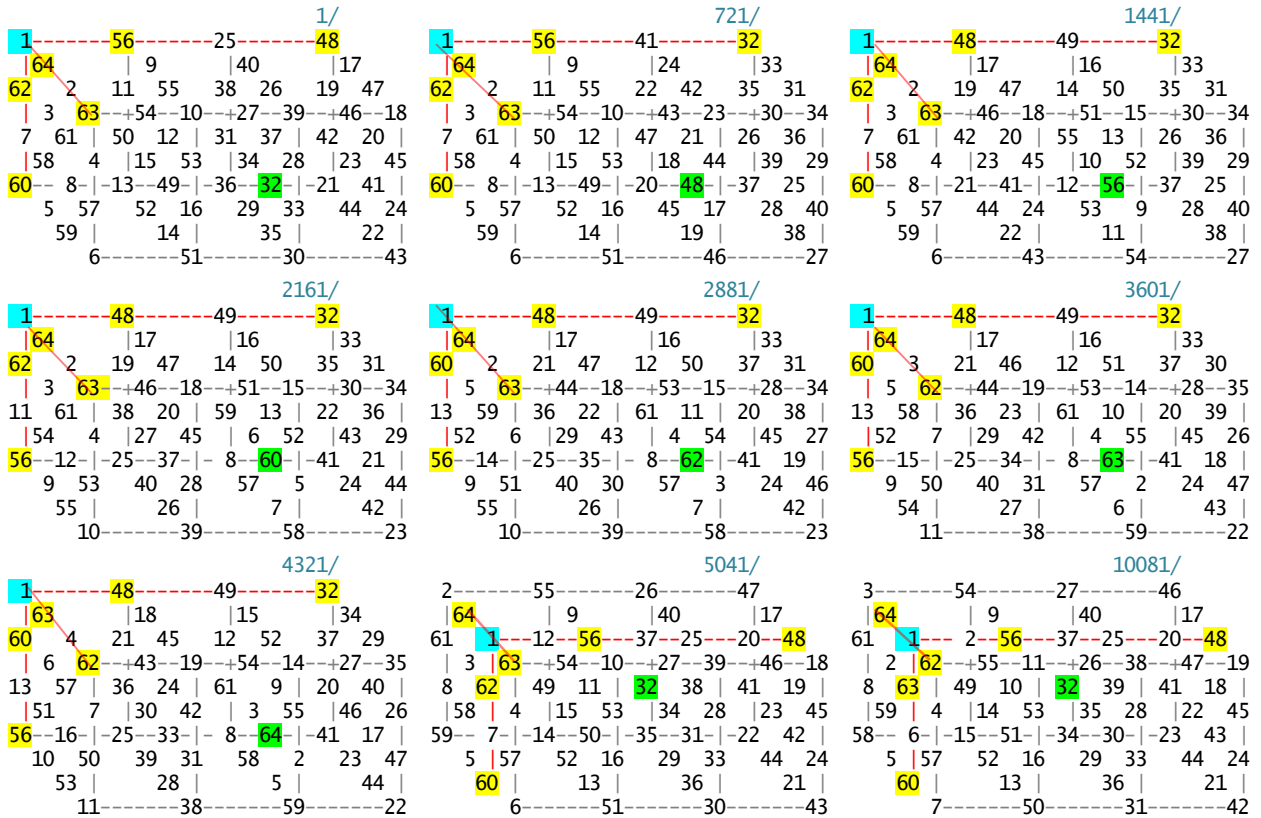
** Calculated and Listed by Kanji Setsuda on
Dec.30, 2014 with MacOSX 10.10.1 & Xcode 6.1.1 **

Just as you see above, we have really got the correct Basic Data for our study.
If we compare them with the standard solutions listed in the last article, we know:
The new solution count certainly means $322560 = 48 \times 6720$;
And the new count when $n1=1$ means $5040 = 6 \times 840$;
(6 means the count ↑ of 'Umbrella Rotations')

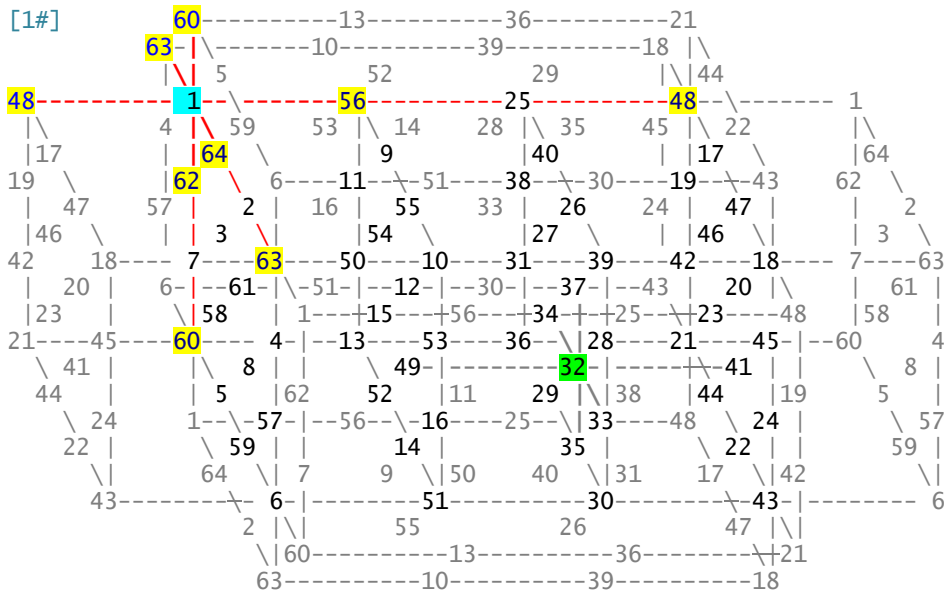
#4. Number 1 and its own 7 fixed Followers around it

Watch the next list of solutions, and you will find number **1** is always accompanied with its own 7 fixed 'Followers' around it: **Six** on the 6 fixed seats on the same 3 axes where **1** is situated on, and the rest one on the Panmagic Symmetric Center to **1**.

** Sample List of Primitive Solutions Pre-normalized **



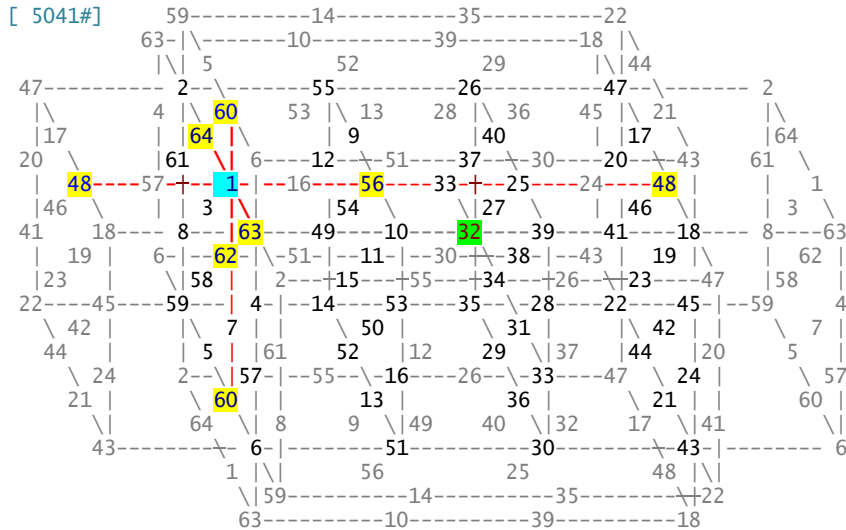
.....



The next diagram above is drawn for the same solution **1#** in the Extended Space. We can move the 3 numbers 48, 60 and 63 to the other side of number **1**, whenever we want to, by the Panmagic Plane Shifting. You will see the 6 'followers' are sitting on the adjacent seats next to **1**. They want to sit on the nearest seats around **1**.

Wherever number **1** goes out of the Origin n1, its own 7 followers would always go

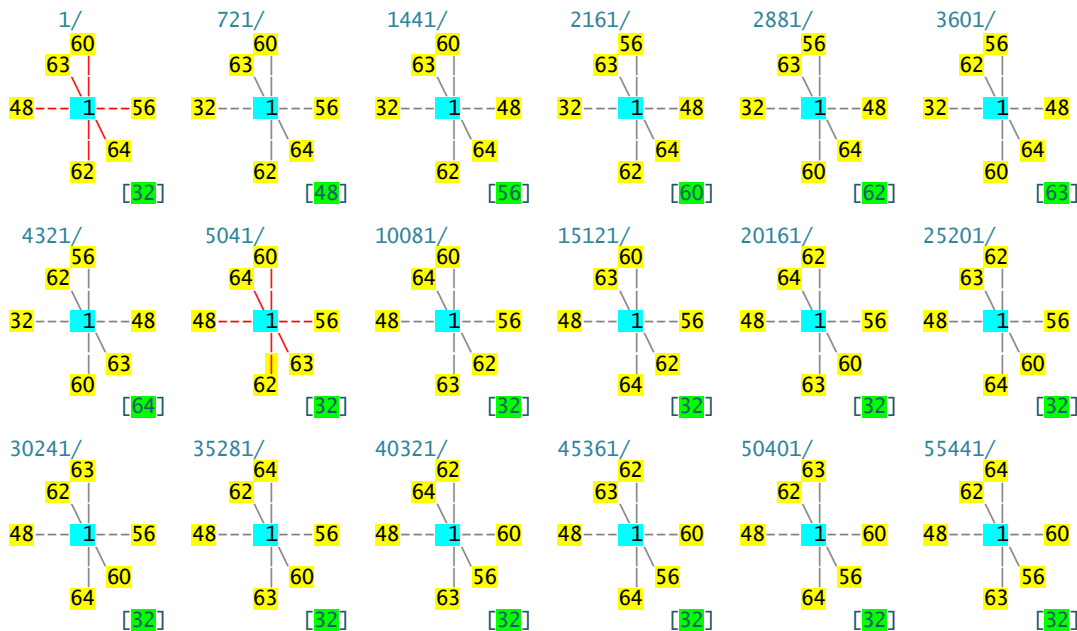
along with it, strictly keeping their relative positions to **1**, illustrated as below.



Watch the next list below, please. It shows our good old fellows {64, 63, 62, 60, 56, 48 and 32} are constantly the 'fixed members' for the number **1**, with no exception. But, the ways how they sit on the 7 fixed positions seem to be exchangeable.

** Number **1** and its 7 fixed 'Followers' abstracted:

6 Adjacent Numbers next to **1** in the 3-Dimensional expression and the rest one on [PSC] **



- 60481: { 1, 56, 60, 64, 63, 62, 48, 32 }; 65521: { 1, 56, 60, 63, 64, 62, 48, 32 }; 70561: { 1, 56, 60, 62, 64, 63, 48, 32 };
- 75601: { 1, 56, 60, 62, 63, 64, 48, 32 }; 80641: { 1, 48, 64, 63, 62, 60, 56, 32 }; 85681: { 1, 48, 63, 64, 62, 60, 56, 32 };
- 90721: { 1, 48, 62, 64, 63, 60, 56, 32 }; 95761: { 1, 48, 62, 63, 64, 60, 56, 32 }; 100801: { 1, 48, 60, 64, 63, 62, 56, 32 };
- 105841: { 1, 48, 60, 63, 64, 62, 56, 32 }; 110881: { 1, 48, 60, 62, 64, 63, 56, 32 }; 115921: { 1, 48, 60, 62, 63, 64, 56, 32 };
- 120961: { 1, 48, 56, 64, 63, 62, 60, 32 }; 126001: { 1, 48, 56, 63, 64, 62, 60, 32 }; 131041: { 1, 48, 56, 62, 64, 63, 60, 32 };
- 136081: { 1, 48, 56, 62, 63, 64, 60, 32 }; 141121: { 1, 48, 56, 60, 64, 63, 62, 32 }; 146161: { 1, 48, 56, 60, 63, 64, 62, 32 };
- 151201: { 1, 48, 56, 60, 62, 64, 63, 32 }; 156241: { 1, 48, 56, 60, 62, 63, 64, 32 }; 161281: { 1, 32, 64, 63, 62, 60, 56, 48 };
- 166321: { 1, 32, 63, 64, 62, 60, 56, 48 }; 171361: { 1, 32, 62, 64, 63, 60, 56, 48 }; 176401: { 1, 32, 62, 63, 64, 60, 56, 48 };
- 181441: { 1, 32, 60, 64, 63, 62, 56, 48 }; 186481: { 1, 32, 60, 63, 64, 62, 56, 48 }; 191521: { 1, 32, 60, 62, 64, 63, 56, 48 };
- 196561: { 1, 32, 60, 62, 63, 64, 56, 48 }; 201601: { 1, 32, 56, 64, 63, 62, 60, 48 }; 206641: { 1, 32, 56, 63, 64, 62, 60, 48 };
- 211681: { 1, 32, 56, 62, 64, 63, 60, 48 }; 216721: { 1, 32, 56, 62, 63, 64, 60, 48 }; 221761: { 1, 32, 56, 60, 64, 63, 62, 48 };
- 226801: { 1, 32, 56, 60, 63, 64, 62, 48 }; 231841: { 1, 32, 56, 60, 62, 64, 63, 48 }; 236881: { 1, 32, 56, 60, 62, 63, 64, 48 };
- 241921: { 1, 32, 48, 64, 63, 62, 60, 56 }; 246961: { 1, 32, 48, 63, 64, 62, 60, 56 }; 252001: { 1, 32, 48, 62, 64, 63, 60, 56 };
- 257041: { 1, 32, 48, 62, 63, 64, 60, 56 }; 262081: { 1, 32, 48, 60, 64, 63, 62, 56 }; 267121: { 1, 32, 48, 60, 63, 64, 62, 56 };
- 272161: { 1, 32, 48, 60, 62, 64, 63, 56 }; 277201: { 1, 32, 48, 60, 62, 63, 64, 56 }; 282241: { 1, 32, 48, 56, 64, 63, 62, 60 };
- 287281: { 1, 32, 48, 56, 63, 64, 62, 60 }; 292321: { 1, 32, 48, 56, 62, 64, 63, 60 }; 297361: { 1, 32, 48, 56, 62, 63, 64, 60 };
- 302401: { 1, 32, 48, 56, 60, 64, 63, 62 }; 307441: { 1, 32, 48, 56, 60, 63, 64, 62 }; 312481: { 1, 32, 48, 56, 60, 62, 64, 63 };
- 317521: { 1, 32, 48, 56, 60, 62, 63, 64 };

How many ways do they have for sitting orders on those 7 fixed seats, then?
 If they are completely free and equal, there should be 5040 ways possible for them.
 It is a problem of Permutation: ${}^7P_7 = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$;

#5. How do they determine the Total Solution Count of our object?

5040 happens to be the same with the count of primitive solutions when $n_1=1$.
 And Number 1 can go anywhere on to the positions $n_1 \sim n_{64}$ freely and equally.
 It is shown in the last list of Positional Monitor. Let me carry it here again.

[Monitor List 1: Solution Counts according to the Positions of Value 1]

1: 5040, 2: 5040, 3: 5040, 4: 5040, 5: 5040, 6: 5040, 7: 5040, 8: 5040,
 9: 5040, 10: 5040, 11: 5040, 12: 5040, 13: 5040, 14: 5040, 15: 5040, 16: 5040,
 17: 5040, 18: 5040, 19: 5040, 20: 5040, 21: 5040, 22: 5040, 23: 5040, 24: 5040,
 25: 5040, 26: 5040, 27: 5040, 28: 5040, 29: 5040, 30: 5040, 31: 5040, 32: 5040,
 33: 5040, 34: 5040, 35: 5040, 36: 5040, 37: 5040, 38: 5040, 39: 5040, 40: 5040,
 41: 5040, 42: 5040, 43: 5040, 44: 5040, 45: 5040, 46: 5040, 47: 5040, 48: 5040,
 49: 5040, 50: 5040, 51: 5040, 52: 5040, 53: 5040, 54: 5040, 55: 5040, 56: 5040,
 57: 5040, 58: 5040, 59: 5040, 60: 5040, 61: 5040, 62: 5040, 63: 5040, 64: 5040;

The total count of primitive solutions could be calculated as: $5040 \times 64 = 322560$;
 Is it only an accidental coincidence? No. It should be necessary.

And it does mean that our team of number 1 and its 7 fixed followers actually
 determines the total solution count of our object, doesn't it? Why!

Why are they made so? We must study and know what the true reasons are.

Let's begin our Algebraic study now and know the inherent structure of our object.

#6. Find the 'Complementary Pairs' as many as possible.

Since I found so many 'Complementary Pairs' making our cube, I want to define this
 word explicitly before all.

When $m+n=CS$, we say "(m, n) is a 'complementary pair' of CS."

When we say "(m, n) is a complementary pair of CS", we mean: $m+n=CS$;

This sum CS is always important.

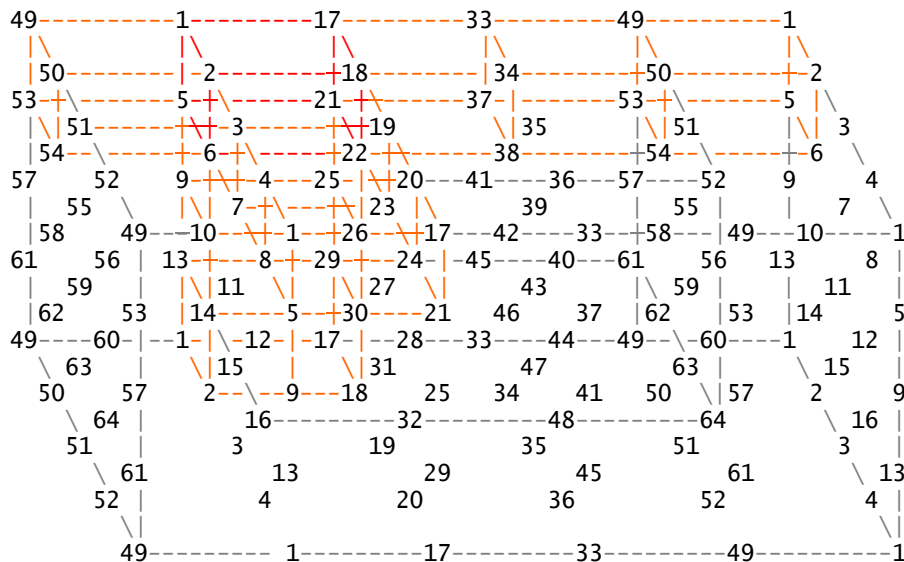
At first let's get back to the first definition stage.

* Simultaneous Equations of 'Composite' Fours: $CS=130$; *

$n_1+n_2+n_5+n_6=CS$..cc001; | $n_1+n_2+n_17+n_18=CS$..cc002; | $n_1+n_5+n_17+n_21=CS$..cc003;
 $n_2+n_3+n_6+n_7=CS$..cc004; | $n_2+n_3+n_18+n_19=CS$..cc005; | $n_2+n_6+n_18+n_22=CS$..cc006;
 $n_3+n_4+n_7+n_8=CS$..cc007; | $n_3+n_4+n_19+n_20=CS$..cc008; | $n_3+n_7+n_19+n_23=CS$..cc009;
 $n_4+n_1+n_8+n_5=CS$..cc010; | $n_4+n_1+n_20+n_17=CS$..cc011; | $n_4+n_8+n_20+n_24=CS$..cc012;
 $n_5+n_6+n_9+n_10=CS$..cc013; | $n_5+n_6+n_21+n_22=CS$..cc014; | $n_5+n_9+n_21+n_25=CS$..cc015;
 $n_6+n_7+n_10+n_11=CS$..cc016; | $n_6+n_7+n_22+n_23=CS$..cc017; | $n_6+n_10+n_22+n_26=CS$..cc018;
 $n_7+n_8+n_11+n_12=CS$..cc019; | $n_7+n_8+n_23+n_24=CS$..cc020; | $n_7+n_11+n_23+n_27=CS$..cc021;
 $n_8+n_5+n_12+n_9=CS$..cc022; | $n_8+n_5+n_24+n_21=CS$..cc023; | $n_8+n_12+n_24+n_28=CS$..cc024;
 $n_9+n_10+n_13+n_14=CS$..cc025; | $n_9+n_10+n_25+n_26=CS$..cc026; | $n_9+n_13+n_25+n_29=CS$..cc027;
 $n_{10}+n_{11}+n_{14}+n_{15}=CS$..cc028; | $n_{10}+n_{11}+n_{26}+n_{27}=CS$..cc029; | $n_{10}+n_{14}+n_{26}+n_{30}=CS$..cc030;
 $n_{11}+n_{12}+n_{15}+n_{16}=CS$..cc031; | $n_{11}+n_{12}+n_{27}+n_{28}=CS$..cc032; | $n_{11}+n_{15}+n_{27}+n_{31}=CS$..cc033;
 $n_{12}+n_9+n_{16}+n_{13}=CS$..cc034; | $n_{12}+n_9+n_{28}+n_{25}=CS$..cc035; | $n_{12}+n_{16}+n_{28}+n_{32}=CS$..cc036;
 $n_{13}+n_{14}+n_1+n_2=CS$..cc037; | $n_{13}+n_{14}+n_{29}+n_{30}=CS$..cc038; | $n_{13}+n_1+n_{29}+n_{17}=CS$..cc039;
 $n_{14}+n_{15}+n_2+n_3=CS$..cc040; | $n_{14}+n_{15}+n_{30}+n_{31}=CS$..cc041; | $n_{14}+n_2+n_{30}+n_{18}=CS$..cc042;
 $n_{15}+n_{16}+n_3+n_4=CS$..cc043; | $n_{15}+n_{16}+n_{31}+n_{32}=CS$..cc044; | $n_{15}+n_3+n_{31}+n_{19}=CS$..cc045;
 $n_{16}+n_{13}+n_4+n_1=CS$..cc046; | $n_{16}+n_{13}+n_{32}+n_{29}=CS$..cc047; | $n_{16}+n_4+n_{32}+n_{20}=CS$..cc048;
 $n_{17}+n_{18}+n_{21}+n_{22}=CS$..cc049; | $n_{17}+n_{18}+n_{33}+n_{34}=CS$..cc050; | $n_{17}+n_{21}+n_{33}+n_{37}=CS$..cc051;
 $n_{18}+n_{19}+n_{22}+n_{23}=CS$..cc052; | $n_{18}+n_{19}+n_{34}+n_{35}=CS$..cc053; | $n_{18}+n_{22}+n_{34}+n_{38}=CS$..cc054;
 $n_{19}+n_{20}+n_{23}+n_{24}=CS$..cc055; | $n_{19}+n_{20}+n_{35}+n_{36}=CS$..cc056; | $n_{19}+n_{23}+n_{35}+n_{39}=CS$..cc057;
 $n_{20}+n_{17}+n_{24}+n_{21}=CS$..cc058; | $n_{20}+n_{17}+n_{36}+n_{33}=CS$..cc059; | $n_{20}+n_{24}+n_{36}+n_{40}=CS$..cc060;
 $n_{21}+n_{22}+n_{25}+n_{26}=CS$..cc061; | $n_{21}+n_{22}+n_{37}+n_{38}=CS$..cc062; | $n_{21}+n_{25}+n_{37}+n_{41}=CS$..cc063;
 $n_{22}+n_{23}+n_{26}+n_{27}=CS$..cc064; | $n_{22}+n_{23}+n_{38}+n_{39}=CS$..cc065; | $n_{22}+n_{26}+n_{38}+n_{42}=CS$..cc066;
 $n_{23}+n_{24}+n_{27}+n_{28}=CS$..cc067; | $n_{23}+n_{24}+n_{39}+n_{40}=CS$..cc068; | $n_{23}+n_{27}+n_{39}+n_{43}=CS$..cc069;
 $n_{24}+n_{21}+n_{28}+n_{25}=CS$..cc070; | $n_{24}+n_{21}+n_{40}+n_{37}=CS$..cc071; | $n_{24}+n_{28}+n_{40}+n_{44}=CS$..cc072;

$n_{25}+n_{26}+n_{29}+n_{30}=CS \dots cc073;$ | $n_{25}+n_{26}+n_{41}+n_{42}=CS \dots cc074;$ | $n_{25}+n_{29}+n_{41}+n_{45}=CS \dots cc075;$
 $n_{26}+n_{27}+n_{30}+n_{31}=CS \dots cc076;$ | $n_{26}+n_{27}+n_{42}+n_{43}=CS \dots cc077;$ | $n_{26}+n_{30}+n_{42}+n_{46}=CS \dots cc078;$
 $n_{27}+n_{28}+n_{31}+n_{32}=CS \dots cc079;$ | $n_{27}+n_{28}+n_{43}+n_{44}=CS \dots cc080;$ | $n_{27}+n_{31}+n_{43}+n_{47}=CS \dots cc081;$
 $n_{28}+n_{25}+n_{32}+n_{29}=CS \dots cc082;$ | $n_{28}+n_{25}+n_{44}+n_{41}=CS \dots cc083;$ | $n_{28}+n_{32}+n_{44}+n_{48}=CS \dots cc084;$
 $n_{29}+n_{30}+n_{17}+n_{18}=CS \dots cc085;$ | $n_{29}+n_{30}+n_{45}+n_{46}=CS \dots cc086;$ | $n_{29}+n_{17}+n_{45}+n_{33}=CS \dots cc087;$
 $n_{30}+n_{31}+n_{18}+n_{19}=CS \dots cc088;$ | $n_{30}+n_{31}+n_{46}+n_{47}=CS \dots cc089;$ | $n_{30}+n_{18}+n_{46}+n_{34}=CS \dots cc090;$
 $n_{31}+n_{32}+n_{19}+n_{20}=CS \dots cc091;$ | $n_{31}+n_{32}+n_{47}+n_{48}=CS \dots cc092;$ | $n_{31}+n_{19}+n_{47}+n_{35}=CS \dots cc093;$
 $n_{32}+n_{29}+n_{20}+n_{17}=CS \dots cc094;$ | $n_{32}+n_{29}+n_{48}+n_{45}=CS \dots cc095;$ | $n_{32}+n_{20}+n_{48}+n_{36}=CS \dots cc096;$
 $n_{33}+n_{34}+n_{37}+n_{38}=CS \dots cc097;$ | $n_{33}+n_{34}+n_{49}+n_{50}=CS \dots cc098;$ | $n_{33}+n_{37}+n_{49}+n_{53}=CS \dots cc099;$
 $n_{34}+n_{35}+n_{38}+n_{39}=CS \dots cc100;$ | $n_{34}+n_{35}+n_{50}+n_{51}=CS \dots cc101;$ | $n_{34}+n_{38}+n_{50}+n_{54}=CS \dots cc102;$
 $n_{35}+n_{36}+n_{39}+n_{40}=CS \dots cc103;$ | $n_{35}+n_{36}+n_{51}+n_{52}=CS \dots cc104;$ | $n_{35}+n_{39}+n_{51}+n_{55}=CS \dots cc105;$
 $n_{36}+n_{33}+n_{40}+n_{37}=CS \dots cc106;$ | $n_{36}+n_{33}+n_{52}+n_{49}=CS \dots cc107;$ | $n_{36}+n_{40}+n_{52}+n_{56}=CS \dots cc108;$
 $n_{37}+n_{38}+n_{41}+n_{42}=CS \dots cc109;$ | $n_{37}+n_{38}+n_{53}+n_{54}=CS \dots cc110;$ | $n_{37}+n_{41}+n_{53}+n_{57}=CS \dots cc111;$
 $n_{38}+n_{39}+n_{42}+n_{43}=CS \dots cc112;$ | $n_{38}+n_{39}+n_{54}+n_{55}=CS \dots cc113;$ | $n_{38}+n_{42}+n_{54}+n_{58}=CS \dots cc114;$
 $n_{39}+n_{40}+n_{43}+n_{44}=CS \dots cc115;$ | $n_{39}+n_{40}+n_{55}+n_{56}=CS \dots cc116;$ | $n_{39}+n_{43}+n_{55}+n_{59}=CS \dots cc117;$
 $n_{40}+n_{37}+n_{44}+n_{41}=CS \dots cc118;$ | $n_{40}+n_{37}+n_{56}+n_{53}=CS \dots cc119;$ | $n_{40}+n_{44}+n_{56}+n_{60}=CS \dots cc120;$
 $n_{41}+n_{42}+n_{45}+n_{46}=CS \dots cc121;$ | $n_{41}+n_{42}+n_{57}+n_{58}=CS \dots cc122;$ | $n_{41}+n_{45}+n_{57}+n_{61}=CS \dots cc123;$
 $n_{42}+n_{43}+n_{46}+n_{47}=CS \dots cc124;$ | $n_{42}+n_{43}+n_{58}+n_{59}=CS \dots cc125;$ | $n_{42}+n_{46}+n_{58}+n_{62}=CS \dots cc126;$
 $n_{43}+n_{44}+n_{47}+n_{48}=CS \dots cc127;$ | $n_{43}+n_{44}+n_{59}+n_{60}=CS \dots cc128;$ | $n_{43}+n_{47}+n_{59}+n_{63}=CS \dots cc129;$
 $n_{44}+n_{41}+n_{48}+n_{45}=CS \dots cc130;$ | $n_{44}+n_{41}+n_{60}+n_{57}=CS \dots cc131;$ | $n_{44}+n_{48}+n_{60}+n_{64}=CS \dots cc132;$
 $n_{45}+n_{46}+n_{33}+n_{34}=CS \dots cc133;$ | $n_{45}+n_{46}+n_{61}+n_{62}=CS \dots cc134;$ | $n_{45}+n_{33}+n_{61}+n_{49}=CS \dots cc135;$
 $n_{46}+n_{47}+n_{34}+n_{35}=CS \dots cc136;$ | $n_{46}+n_{47}+n_{62}+n_{63}=CS \dots cc137;$ | $n_{46}+n_{34}+n_{62}+n_{50}=CS \dots cc138;$
 $n_{47}+n_{48}+n_{35}+n_{36}=CS \dots cc139;$ | $n_{47}+n_{48}+n_{63}+n_{64}=CS \dots cc140;$ | $n_{47}+n_{35}+n_{63}+n_{51}=CS \dots cc141;$
 $n_{48}+n_{45}+n_{36}+n_{33}=CS \dots cc142;$ | $n_{48}+n_{45}+n_{64}+n_{61}=CS \dots cc143;$ | $n_{48}+n_{36}+n_{64}+n_{52}=CS \dots cc144;$
 $n_{49}+n_{50}+n_{53}+n_{54}=CS \dots cc145;$ | $n_{49}+n_{50}+n_{1}+n_{2}=CS \dots cc146;$ | $n_{49}+n_{53}+n_{1}+n_{5}=CS \dots cc147;$
 $n_{50}+n_{51}+n_{54}+n_{55}=CS \dots cc148;$ | $n_{50}+n_{51}+n_{2}+n_{3}=CS \dots cc149;$ | $n_{50}+n_{54}+n_{2}+n_{6}=CS \dots cc150;$
 $n_{51}+n_{52}+n_{55}+n_{56}=CS \dots cc151;$ | $n_{51}+n_{52}+n_{3}+n_{4}=CS \dots cc152;$ | $n_{51}+n_{55}+n_{3}+n_{7}=CS \dots cc153;$
 $n_{52}+n_{49}+n_{56}+n_{53}=CS \dots cc154;$ | $n_{52}+n_{49}+n_{4}+n_{1}=CS \dots cc155;$ | $n_{52}+n_{56}+n_{4}+n_{8}=CS \dots cc156;$
 $n_{53}+n_{54}+n_{57}+n_{58}=CS \dots cc157;$ | $n_{53}+n_{54}+n_{5}+n_{6}=CS \dots cc158;$ | $n_{53}+n_{57}+n_{5}+n_{9}=CS \dots cc159;$
 $n_{54}+n_{55}+n_{58}+n_{59}=CS \dots cc160;$ | $n_{54}+n_{55}+n_{6}+n_{7}=CS \dots cc161;$ | $n_{54}+n_{58}+n_{6}+n_{10}=CS \dots cc162;$
 $n_{55}+n_{56}+n_{59}+n_{60}=CS \dots cc163;$ | $n_{55}+n_{56}+n_{7}+n_{8}=CS \dots cc164;$ | $n_{55}+n_{59}+n_{7}+n_{11}=CS \dots cc165;$
 $n_{56}+n_{53}+n_{60}+n_{57}=CS \dots cc166;$ | $n_{56}+n_{53}+n_{8}+n_{5}=CS \dots cc167;$ | $n_{56}+n_{60}+n_{8}+n_{12}=CS \dots cc168;$
 $n_{57}+n_{58}+n_{61}+n_{62}=CS \dots cc169;$ | $n_{57}+n_{58}+n_{9}+n_{10}=CS \dots cc170;$ | $n_{57}+n_{61}+n_{9}+n_{13}=CS \dots cc171;$
 $n_{58}+n_{59}+n_{62}+n_{63}=CS \dots cc172;$ | $n_{58}+n_{59}+n_{10}+n_{11}=CS \dots cc173;$ | $n_{58}+n_{62}+n_{10}+n_{14}=CS \dots cc174;$
 $n_{59}+n_{60}+n_{63}+n_{64}=CS \dots cc175;$ | $n_{59}+n_{60}+n_{11}+n_{12}=CS \dots cc176;$ | $n_{59}+n_{63}+n_{11}+n_{15}=CS \dots cc177;$
 $n_{60}+n_{57}+n_{64}+n_{61}=CS \dots cc178;$ | $n_{60}+n_{57}+n_{12}+n_{9}=CS \dots cc179;$ | $n_{60}+n_{64}+n_{12}+n_{16}=CS \dots cc180;$
 $n_{61}+n_{62}+n_{49}+n_{50}=CS \dots cc181;$ | $n_{61}+n_{62}+n_{13}+n_{14}=CS \dots cc182;$ | $n_{61}+n_{49}+n_{13}+n_{1}=CS \dots cc183;$
 $n_{62}+n_{63}+n_{50}+n_{51}=CS \dots cc184;$ | $n_{62}+n_{63}+n_{14}+n_{15}=CS \dots cc185;$ | $n_{62}+n_{50}+n_{14}+n_{2}=CS \dots cc186;$
 $n_{63}+n_{64}+n_{51}+n_{52}=CS \dots cc187;$ | $n_{63}+n_{64}+n_{15}+n_{16}=CS \dots cc188;$ | $n_{63}+n_{51}+n_{15}+n_{3}=CS \dots cc189;$
 $n_{64}+n_{61}+n_{52}+n_{49}=CS \dots cc190;$ | $n_{64}+n_{61}+n_{16}+n_{13}=CS \dots cc191;$ | $n_{64}+n_{52}+n_{16}+n_{4}=CS \dots cc192;$

** Basic Form for 'C&P' Magic Cube of Order 4 in the Extended Space **



Take some of those simultaneous equations above, compare them and calculate:
 First of all let's collect any complementary pairs whose sums are equal, and make

them classified into a set. How many pairs can we collect in a set?

* Calculations to find which pair has the same sum with the others: CS=130; *

(1)

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| $\begin{array}{r} n1+n2+n17+n18=CS \dots cc02; \\ n17+n18+n21+n22=CS \dots cc49; (- \\ \hline n1+n2=n21+n22=A \end{array}$ | $\begin{array}{r} n1+n2+n17+n18=CS \dots cc02; \\ n17+n18+n33+n34=CS \dots cc50; (- \\ \hline n1+n2=n33+n34=A \end{array}$ |
| $\begin{array}{r} n1+n2+n5+n6=CS \dots cc01; \\ n5+n6+n9+n10=CS \dots cc13; (- \\ \hline n1+n2=n9+n10=A \end{array}$ | $\begin{array}{r} n1+n2+n5+n6=CS \dots cc01; \\ n53+n54+n5+n6=CS \dots cc158; (- \\ \hline n1+n2=n53+n54=A \end{array}$ |
| $\begin{array}{r} n1+n2+n13+n14=CS \dots cc37; \\ n61+n62+n13+n14=CS \dots cc182; (- \\ \hline n1+n2=n61+n62=A \end{array}$ | $\begin{array}{r} n33+n34+n37+n38=CS \dots cc097; \\ n37+n38+n41+n42=CS \dots cc109; (- \\ \hline n33+n34=n41+n42=A \end{array}$ |
| $\begin{array}{r} n21+n22+n25+n26=CS \dots cc61; \\ n25+n26+n29+n30=CS \dots cc73; (- \\ \hline n21+n22=n29+n30=A \end{array}$ | $\begin{array}{r} n1+n2+n13+n14=CS \dots cc37; \\ n49+n50+n1+n2=CS \dots cc146; (- \\ \hline n13+n14=n49+n50=B \end{array}$ |
| $\begin{array}{r} n1+n2+n5+n6=CS \dots cc01; \\ n1+n2+n17+n18=CS \dots cc02; (- \\ \hline n5+n6=n17+n18=B \end{array}$ | $\begin{array}{r} n1+n2+n17+n18=CS \dots cc02; \\ n49+n50+n1+n2=CS \dots cc146; (- \\ \hline n17+n48=n49+n50=B \end{array}$ |
| $\begin{array}{r} n5+n6+n21+n22=CS \dots cc14; \\ n21+n22+n37+n38=CS \dots cc62; (- \\ \hline n5+n6=n37+n38=B \end{array}$ | $\begin{array}{r} n5+n6+n21+n22=CS \dots cc14; \\ n21+n22+n25+n26=CS \dots cc61; (- \\ \hline n5+n6=n25+n26=B \end{array}$ |
| $\begin{array}{r} n5+n6+n9+n10=CS \dots cc13; \\ n57+n58+n9+n10=CS \dots cc170; (- \\ \hline n5+n6=n57+n58=B \end{array}$ | $\begin{array}{r} n37+n38+n41+n42=CS \dots cc109; \\ n41+n42+n45+n46=CS \dots cc121; (- \\ \hline n37+n38=n45+n46=B; \end{array}$ |

and $A+B = CS$;

Let's add the Basic Conditions here to find another pairs with the same sums.

* Simultaneous Equations for Basic Conditions: CS=130; *

$n1+n2+n3+n4=CS \dots Row$; $n1+n17+n33+n49=CS \dots Column$; $n1+n5+n9+n13=CS \dots Pillar$;

* Calculations 2 to find which pair has the same sums with the others: CS=130; *

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| $\begin{array}{r} n3+n4+n7+n8=CS \dots cc07; \\ n1+n2+n3+n4=CS \dots Row; (- \\ \hline n1+n2=n7+n8=A \end{array}$ | $\begin{array}{r} n3+n4+n7+n8=CS \dots cc07; \\ n3+n4+n19+n20=CS \dots cc08; (- \\ \hline n7+n8=n19+n20=A \end{array}$ |
| $\begin{array}{r} n19+n20+n23+n24=CS \dots cc55; \\ n23+n24+n27+n28=CS \dots cc67; (- \\ \hline n19+n20=n27+n28=A \end{array}$ | $\begin{array}{r} n7+n8+n11+n12=CS \dots cc19; \\ n11+n12+n15+n16=CS \dots cc31; (- \\ \hline n7+n8=n15+n16=A \end{array}$ |
| $\begin{array}{r} n7+n8+n23+n24=CS \dots cc20; \\ n23+n24+n39+n40=CS \dots cc68; (- \\ \hline n7+n8=n39+n40=A \end{array}$ | $\begin{array}{r} n7+n8+n11+n12=CS \dots cc19; \\ n59+n60+n11+n12=CS \dots cc176; (- \\ \hline n7+n8=n59+n60=A \end{array}$ |
| <p>.....</p> $\begin{array}{r} n1+n2+n5+n6=CS \dots cc01; \\ n1+n2+n3+n4=CS \dots Row; (- \\ \hline n3+n4=n5+n6=B \end{array}$ | $\begin{array}{r} n3+n4+n19+n20=CS \dots cc08; \\ n19+n20+n23+n24=CS \dots cc55; (- \\ \hline n3+n4=n23+n24=B \end{array}$ |

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| $\begin{array}{r} n3+n4+n7+n8=CS \dots cc07; \\ n7+n8+n11+n12=CS \dots cc19; (- \\ \hline n3+n4=n11+n12=B \end{array}$ | $\begin{array}{r} n23+n24+n27+n28=CS \dots cc67; \\ n27+n28+n31+n32=CS \dots cc79; (- \\ \hline n23+n24=n31+n32=B \end{array}$ |
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| | |
|--|--|
| $\begin{array}{r} n3+n4+n19+n20=CS \dots cc08; \\ n19+n20+n35+n36=CS \dots cc56; (- \\ \hline n3+n4=n35+n36=B \end{array}$ | $\begin{array}{r} n35+n36+n39+n40=CS \dots cc103; \\ n39+n40+n43+n44=CS \dots cc115; (- \\ \hline n35+n36=n43+n44=B \end{array}$ |
|--|--|

.

Therefore, $n1+n2=n7+n8=n9+n10=n15+n16=n19+n20=n21+n22=n27+n28=n29+n30=n33+n34=n39+n40=n41+n42=n47+n48=n51+n52=n53+n54=n59+n60=n61+n62=A=CS12$;

Let's call this set "CS12".

And $n3+n4=n5+n6=n11+n12=n13+n14=n17+n18=n23+n24=n25+n26=n31+n32=n35+n36=n37+n38=n43+n44=n45+n46=n49+n50=n55+n56=n57+n58=n63+n64=B=CS34$;

Let's call this set "CS34". Of course, $CS12+CS34=CS=130$;

And let's collect these two sets CS12 and CS34 and make a group.

This group has two sets of 16 Complementary Pairs whose sums are CS12 and CS34.

* Calculations 3 to find which pair has the same sums with the others: $CS=130$; *

(2)

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| $\begin{array}{r} n1+n2+n5+n6=CS \dots cc01; \\ n2+n3+n6+n7=CS \dots cc04; (- \\ \hline n1+n5=n3+n7=C \end{array}$ | $\begin{array}{r} n2+n3+n6+n7=CS \dots cc04; \\ n3+n4+n7+n8=CS \dots cc07; (- \\ \hline n2+n6=n4+n8=D \end{array}$ |
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| $\begin{array}{r} n1+n5+n17+n21=CS \dots cc03; \\ n17+n21+n33+n37=CS \dots cc49; (- \\ \hline n1+n5=n33+n37=C \end{array}$ | $\begin{array}{r} n1+n2+n5+n6=CS \dots cc01; \\ n1+n5+n17+n21=CS \dots cc03; (- \\ \hline n2+n6=n17+n21=D \end{array}$ |
|--|--|

| | |
|--|--|
| $\begin{array}{r} n1+n5+n17+n21=CS \dots cc03; \\ n17+n18+n21+n22=CS \dots cc49; (- \\ \hline n1+n5=n18+n22=C \end{array}$ | $\begin{array}{r} n17+n21+n33+n37=CS \dots cc49; \\ n33+n37+n49+n53=CS \dots cc99; (- \\ \hline n17+n21=n49+n53=D \end{array}$ |
|--|--|

| | |
|--|--|
| $\begin{array}{r} n3+n7+n19+n23=CS \dots cc09; \\ n19+n20+n23+n24=CS \dots cc55; (- \\ \hline n3+n7=n20+n24=C \end{array}$ | $\begin{array}{r} n2+n3+n6+n7=CS \dots cc04; \\ n3+n7+n19+n23=CS \dots cc09; (- \\ \hline n2+n6=n19+n23=D \end{array}$ |
|--|--|

.
and $C+D = CS$;

I calculated in the same way, skipping explanations, and got the next two sets:

$$n1+n5=n3+n7=n10+n14=n12+n16=n18+n22=n20+n24=n25+n29=n27+n31=n33+n37=$$

$$n35+n39=n42+n46=n44+n48=n50+n54=n52+n56=n57+n61=n59+n63=C=CS15;$$

$$n2+n6=n4+n8=n9+n13=n11+n15=n17+n21=n19+n23=n26+n30=n28+n32=n34+n38=$$

$$n36+n40=n41+n45=n43+n47=n49+n53=n51+n55=n58+n62=n60+n64=D=CS26;$$

$$CS15+CS26=C;$$

and collected them into another group.

This group has two sets of 16 Complementary Pairs whose sums are CS15 and CS26.

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(3)

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|--|--|
| $\begin{array}{r} n1+n2+n17+n18=CS \dots cc02; \\ n2+n3+n18+n19=CS \dots cc05; (- \\ \hline n1+n17=n3+n19=E \end{array}$ | $\begin{array}{r} n2+n3+n18+n19=CS \dots cc05; \\ n3+n4+n19+n20=CS \dots cc08; (- \\ \hline n2+n18=n4+n20=F \end{array}$ |
|--|--|

| | |
|--|--|
| $\begin{array}{r} n1+n5+n17+n21=CS \dots cc03; \\ n5+n9+n21+n25=CS \dots cc15; (- \\ \hline n1+n17=n9+n25=E \end{array}$ | $\begin{array}{r} n1+n2+n17+n18=CS \dots cc02; \\ n1+n5+n17+n21=CS \dots cc03; (- \\ \hline n2+n18=n5+n21=F \end{array}$ |
|--|--|

$$\begin{array}{l|l}
 n1+n2+n17+n18=CS \dots cc02; & n2+n3+n18+n19=CS \dots cc05; \\
 n2+n6+n18+n22=CS \dots cc06; (-) & n3+n7+n19+n23=CS \dots cc09; (-) \\
 \hline
 n1+n17=n6+n22=E & n2+n18=n7+n23=F
 \end{array}$$

and $E+F = CS$;

I am afraid these explanations are boring if I continue long. Let me skip it and come to the conclusion. I found the 6 groups of Complementary Pairs as below.

*** 6 Groups of 2x16 Complementary Pairs of Composite Pantriagonal MC4 ***

- (1) $n1+n2=n7+n8=n9+n10=n15+n16=n19+n20=n21+n22=n27+n28=n29+n30=$
 $n33+n34=n39+n40=n41+n42=n47+n48=n51+n52=n53+n54=n59+n60=n61+n62=CS12;$
 $n3+n4=n5+n6=n11+n12=n13+n14=n17+n18=n23+n24=n25+n26=n31+n32=$ } $CS12+CS34=CS;$
 $n35+n36=n37+n38=n43+n44=n45+n46=n49+n50=n55+n56=n57+n58=n63+n64=CS34;$
- (2) $n1+n4=n6+n7=n9+n12=n14+n15=n18+n19=n21+n24=n26+n27=n29+n32=$
 $n33+n36=n38+n39=n41+n44=n46+n47=n50+n51=n53+n56=n58+n59=n61+n64=CS14;$
 $n2+n3=n5+n8=n10+n11=n13+n16=n17+n20=n22+n23=n25+n28=n30+n31=$ } $CS14+CS23=CS;$
 $n34+n35=n37+n40=n42+n43=n45+n48=n49+n52=n54+n55=n57+n60=n62+n63=CS23;$
- (3) $n1+n5=n3+n7=n10+n14=n12+n16=n18+n22=n20+n24=n25+n29=n27+n31=$
 $n33+n37=n35+n39=n42+n46=n44+n48=n50+n54=n52+n56=n57+n61=n59+n63=CS15;$
 $n2+n6=n4+n8=n9+n13=n11+n15=n17+n21=n19+n23=n26+n30=n28+n32=$ } $CS15+CS26=CS;$
 $n34+n38=n36+n40=n41+n45=n43+n47=n49+n53=n51+n55=n58+n62=n60+n64=CS26;$
- (4) $n1+n13=n3+n15=n6+n10=n8+n12=n18+n30=n20+n32=n21+n25=n23+n27=$
 $n33+n45=n35+n47=n38+n42=n40+n44=n50+n62=n52+n64=n53+n57=n55+n59=CS113;$
 $n2+n14=n4+n16=n5+n9=n7+n11=n17+n29=n19+n31=n22+n26=n24+n28=$ } $CS113+CS214=CS;$
 $n34+n46=n36+n48=n37+n41=n39+n43=n49+n61=n51+n63=n54+n58=n56+n60=CS214;$
- (5) $n1+n17=n3+n19=n6+n22=n8+n24=n9+n25=n11+n27=n14+n30=n16+n32=$
 $n34+n50=n36+n52=n37+n53=n39+n55=n42+n58=n44+n60=n45+n61=n47+n63=CS117;$
 $n2+n18=n4+n20=n5+n21=n7+n23=n10+n26=n12+n28=n13+n29=n15+n31=$ } $CS117+CS218=CS;$
 $n33+n49=n35+n51=n38+n54=n40+n56=n41+n57=n43+n59=n46+n62=n48+n64=CS218;$
- (6) $n1+n49=n3+n51=n6+n54=n8+n56=n9+n57=n11+n59=n14+n62=n16+n64=$
 $n18+n34=n20+n36=n21+n37=n23+n39=n26+n42=n28+n44=n29+n45=n31+n47=CS149;$
 $n2+n50=n4+n52=n5+n53=n7+n55=n10+n58=n12+n60=n13+n61=n15+n63=$ } $CS149+CS250=CS;$
 $n17+n33=n19+n35=n22+n38=n24+n40=n25+n41=n27+n43=n30+n46=n32+n48=CS250;$

[Basic Form in the Extended Space for 'Pan-triagonal' Magic Cube]

| | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 64 | | 16 | | 32 | | 48 | | 64 | | | | | | |
| 61 | | 13 | | 29 | | 45 | | 61 | | | | | | |
| 52 | 62 | n4 | 14 | 20 | 30 | 36 | 46 | 52 | 62 | | | | | |
| 49 | 63 | n1 | 15 | 17 | 31 | 33 | 47 | 49 | 63 | | | | | |
| 56 | 50 | 64 | n8 | n2 | 16 | 24 | 18 | 32 | 40 | 34 | 48 | 56 | 50 | 64 |
| 53 | 51 | | n5 | n3 | 21 | 19 | 37 | 35 | 53 | 51 | | | | |
| 60 | 54 | 52 | 12 | n6 | n4 | 28 | 22 | 20 | 44 | 38 | 36 | 60 | 54 | 52 |
| 57 | 55 | | n9 | n7 | 25 | 23 | 41 | 39 | 57 | 55 | | | | |
| 64 | 58 | 56 | 16 | 10 | n8 | 32 | 26 | 24 | 48 | 42 | 40 | 64 | 58 | 56 |
| 61 | 59 | | 13 | 11 | 29 | 27 | 45 | 43 | 61 | 59 | | | | |
| 62 | 60 | | 14 | 12 | 30 | 28 | 46 | 44 | 62 | 60 | | | | |
| 63 | | | 15 | | 31 | | 47 | | 63 | | | | | |
| 64 | | | 16 | | 32 | | 48 | | 64 | | | | | |

Watch the list and the Extended Form above, and you will find all the top pairs of 6 groups actually show the exact 'seats' of the 6 fixed 'followers' of Number 1 on **n1**.

This structure proves to be one of the true reasons why their team is organized.

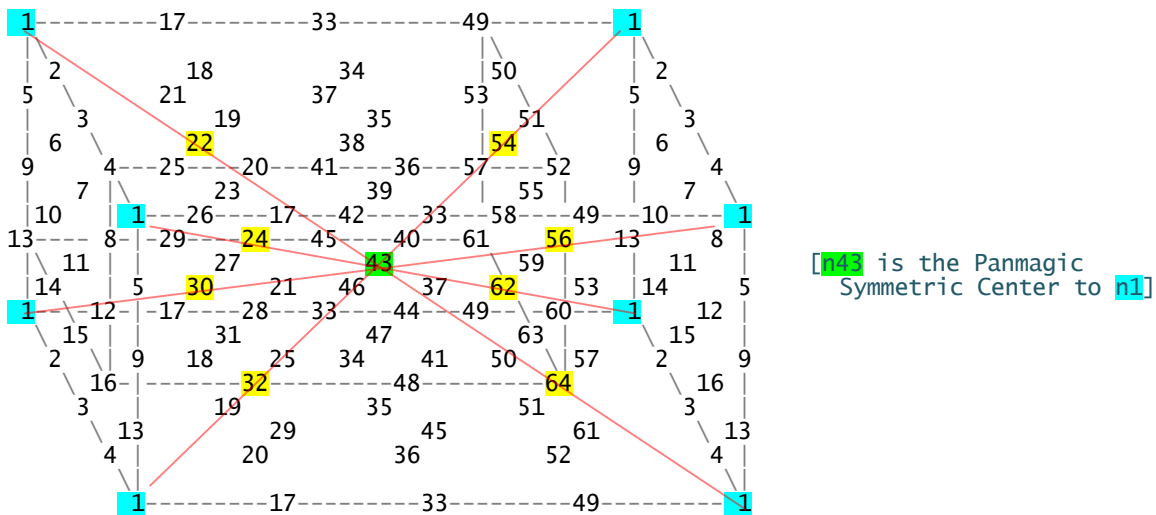
#7. Study the last group of Complementary Pairs on the Pan-triagonals.

Let's study the last group now, the top pair of which is $n1+n43$. They are all placed on the pan-triagonals of our object.

* Simultaneous Equations of Pan-triagonals: CS=130; *

- | | |
|---------------------------------|---------------------------------|
| $n1+n22+n43+n64=CS \dots p1;$ | $n1+n24+n43+n62=CS \dots p2;$ |
| $n1+n30+n43+n56=CS \dots p3;$ | $n1+n32+n43+n54=CS \dots p4;$ |
| $n2+n23+n44+n61=CS \dots p5;$ | $n2+n21+n44+n63=CS \dots p6;$ |
| $n2+n31+n44+n53=CS \dots p7;$ | $n2+n29+n44+n55=CS \dots p8;$ |
| $n3+n24+n41+n62=CS \dots p9;$ | $n3+n22+n41+n64=CS \dots p10;$ |
| $n3+n32+n41+n54=CS \dots p11;$ | $n3+n30+n41+n56=CS \dots p12;$ |
| $n4+n21+n42+n63=CS \dots p13;$ | $n4+n23+n42+n61=CS \dots p14;$ |
| $n4+n29+n42+n55=CS \dots p15;$ | $n4+n31+n42+n53=CS \dots p16;$ |
| $n5+n26+n47+n52=CS \dots p17;$ | $n5+n28+n47+n50=CS \dots p18;$ |
| $n5+n18+n47+n60=CS \dots p19;$ | $n5+n20+n47+n58=CS \dots p20;$ |
| $n6+n27+n48+n49=CS \dots p21;$ | $n6+n25+n48+n51=CS \dots p22;$ |
| $n6+n19+n48+n57=CS \dots p23;$ | $n6+n17+n48+n59=CS \dots p24;$ |
| $n7+n28+n45+n50=CS \dots p25;$ | $n7+n26+n45+n52=CS \dots p26;$ |
| $n7+n20+n45+n58=CS \dots p27;$ | $n7+n18+n45+n60=CS \dots p28;$ |
| $n8+n25+n46+n51=CS \dots p29;$ | $n8+n27+n46+n49=CS \dots p30;$ |
| $n8+n17+n46+n59=CS \dots p31;$ | $n8+n19+n46+n57=CS \dots p32;$ |
| $n9+n30+n35+n56=CS \dots p33;$ | $n9+n32+n35+n54=CS \dots p34;$ |
| $n9+n22+n35+n64=CS \dots p35;$ | $n9+n24+n35+n62=CS \dots p36;$ |
| $n10+n31+n36+n53=CS \dots p37;$ | $n10+n29+n36+n55=CS \dots p38;$ |
| $n10+n23+n36+n61=CS \dots p39;$ | $n10+n21+n36+n63=CS \dots p40;$ |
| $n11+n32+n33+n54=CS \dots p41;$ | $n11+n30+n33+n56=CS \dots p42;$ |
| $n11+n24+n33+n62=CS \dots p43;$ | $n11+n22+n33+n64=CS \dots p44;$ |
| $n12+n29+n34+n55=CS \dots p45;$ | $n12+n31+n34+n53=CS \dots p46;$ |
| $n12+n21+n34+n63=CS \dots p47;$ | $n12+n23+n34+n61=CS \dots p48;$ |
| $n13+n18+n39+n60=CS \dots p49;$ | $n13+n20+n39+n58=CS \dots p50;$ |
| $n13+n26+n39+n52=CS \dots p51;$ | $n13+n28+n39+n50=CS \dots p52;$ |
| $n14+n19+n40+n57=CS \dots p53;$ | $n14+n17+n40+n59=CS \dots p54;$ |
| $n14+n27+n40+n49=CS \dots p55;$ | $n14+n25+n40+n51=CS \dots p56;$ |
| $n15+n20+n37+n58=CS \dots p57;$ | $n15+n18+n37+n60=CS \dots p58;$ |
| $n15+n28+n37+n50=CS \dots p59;$ | $n15+n26+n37+n52=CS \dots p60;$ |
| $n16+n17+n38+n59=CS \dots p61;$ | $n16+n19+n38+n57=CS \dots p62;$ |
| $n16+n25+n38+n51=CS \dots p63;$ | $n16+n27+n38+n49=CS \dots p64;$ |

** Extended Form of Pan-triagonal Magic Cubes of Order 4 **



* Calculations 2 to find which pair has the same sums with the others: CS=130; *

$n1+n22+n43+n64=CS \dots p1;$ $n1+n24+n43+n62=CS \dots p2;$
 $n1+n30+n43+n56=CS \dots p3;$ $n1+n32+n43+n54=CS \dots p4;$
 Suppose $n1+n43=A;$
 Then $A+n22+n64=CS \dots p1;$ $A+n24+n62=CS \dots p2;$ $A+n30+n56=CS \dots p3;$ $A+n32+n54=CS \dots p4;$
 Therefore $n22+n64=n24+n62=n30+n56=n32+n54=CS-A=B;$ And $A+B=CS;$

Let's do the same kind of analysis to the other groups of pan-triagonals, though I skip my detailed explanations here, and get the classified results as follows.

* Classification of the Simultaneous Equations of Pan-triagonals: CS=130; *

- (1) $n1+n22+n43+n64=CS \dots p1$; $n1+n24+n43+n62=CS \dots p2$; $\rightarrow n1+n43=A$;
 $n1+n30+n43+n56=CS \dots p3$; $n1+n32+n43+n54=CS \dots p4$; $\rightarrow n22+n64=n24+n62=n30+n56=n32+n54=B$; $A+B=CS$;
- (2) $n3+n24+n41+n62=CS \dots p9$; $n3+n22+n41+n64=CS \dots p10$; $\rightarrow n3+n41=A$;
 $n3+n32+n41+n54=CS \dots p11$; $n3+n30+n41+n56=CS \dots p12$; $\rightarrow n22+n64=n24+n62=n30+n56=n32+n54=B$; $A+B=CS$;
- (3) $n9+n30+n35+n56=CS \dots p33$; $n9+n32+n35+n54=CS \dots p34$; $\rightarrow n9+n35=A$;
 $n9+n22+n35+n64=CS \dots p35$; $n9+n24+n35+n62=CS \dots p36$; $\rightarrow n22+n64=n24+n62=n30+n56=n32+n54=B$; $A+B=CS$;
- (4) $n11+n32+n33+n54=CS \dots p41$; $n11+n30+n33+n56=CS \dots p42$; $\rightarrow n11+n33=A$;
 $n11+n24+n33+n62=CS \dots p43$; $n11+n22+n33+n64=CS \dots p44$; $\rightarrow n22+n64=n24+n62=n30+n56=n32+n54=B$; $A+B=CS$;
- (5) $n2+n23+n44+n61=CS \dots p5$; $n2+n21+n44+n63=CS \dots p6$; $\rightarrow n2+n44=C$;
 $n2+n31+n44+n53=CS \dots p7$; $n2+n29+n44+n55=CS \dots p8$; $\rightarrow n21+n63=n23+n61=n29+n55=n31+n53=D$; $C+D=CS$;
- (6) $n4+n21+n42+n63=CS \dots p13$; $n4+n23+n42+n61=CS \dots p14$; $\rightarrow n4+n42=C$;
 $n4+n29+n42+n55=CS \dots p15$; $n4+n31+n42+n53=CS \dots p16$; $\rightarrow n21+n63=n23+n61=n29+n55=n31+n53=D$; $C+D=CS$;
- (7) $n10+n31+n36+n53=CS \dots p37$; $n10+n29+n36+n55=CS \dots p38$; $\rightarrow n10+n36=C$;
 $n10+n23+n36+n61=CS \dots p39$; $n10+n21+n36+n63=CS \dots p40$; $\rightarrow n21+n63=n23+n61=n29+n55=n31+n53=D$; $C+D=CS$;
- (8) $n12+n29+n34+n55=CS \dots p45$; $n12+n31+n34+n53=CS \dots p46$; $\rightarrow n12+n34=C$;
 $n12+n21+n34+n63=CS \dots p47$; $n12+n23+n34+n61=CS \dots p48$; $\rightarrow n21+n63=n23+n61=n29+n55=n31+n53=D$; $C+D=CS$;
- (9) $n5+n26+n47+n52=CS \dots p17$; $n5+n28+n47+n50=CS \dots p18$; $\rightarrow n5+n47=E$;
 $n5+n18+n47+n60=CS \dots p19$; $n5+n20+n47+n58=CS \dots p20$; $\rightarrow n18+n60=n20+n58=n26+n52=n28+n50=F$; $E+F=CS$;
- (10) $n7+n28+n45+n50=CS \dots p25$; $n7+n26+n45+n52=CS \dots p26$; $\rightarrow n7+n45=E$;
 $n7+n20+n45+n58=CS \dots p27$; $n7+n18+n45+n60=CS \dots p28$; $\rightarrow n18+n60=n20+n58=n26+n52=n28+n50=F$; $E+F=CS$;
- (11) $n13+n18+n39+n60=CS \dots p49$; $n13+n20+n39+n58=CS \dots p50$; $\rightarrow n13+n39=E$;
 $n13+n26+n39+n52=CS \dots p51$; $n13+n28+n39+n50=CS \dots p52$; $\rightarrow n18+n60=n20+n58=n26+n52=n28+n50=F$; $E+F=CS$;
- (12) $n15+n20+n37+n58=CS \dots p57$; $n15+n18+n37+n60=CS \dots p58$; $\rightarrow n15+n37=E$;
 $n15+n28+n37+n50=CS \dots p59$; $n15+n26+n37+n52=CS \dots p60$; $\rightarrow n18+n60=n20+n58=n26+n52=n28+n50=F$; $E+F=CS$;
- (13) $n6+n27+n48+n49=CS \dots p21$; $n6+n25+n48+n51=CS \dots p22$; $\rightarrow n6+n48=G$;
 $n6+n19+n48+n57=CS \dots p23$; $n6+n17+n48+n59=CS \dots p24$; $\rightarrow n17+n59=n19+n57=n25+n51=n27+n49=H$; $G+H=CS$;
- (14) $n8+n25+n46+n51=CS \dots p29$; $n8+n27+n46+n49=CS \dots p30$; $\rightarrow n8+n46=G$;
 $n8+n17+n46+n59=CS \dots p31$; $n8+n19+n46+n57=CS \dots p32$; $\rightarrow n17+n59=n19+n57=n25+n51=n27+n49=H$; $G+H=CS$;
- (15) $n14+n19+n40+n57=CS \dots p53$; $n14+n17+n40+n59=CS \dots p54$; $\rightarrow n14+n40=G$;
 $n14+n27+n40+n49=CS \dots p55$; $n14+n25+n40+n51=CS \dots p56$; $\rightarrow n17+n59=n19+n57=n25+n51=n27+n49=H$; $G+H=CS$;
- (16) $n16+n17+n38+n59=CS \dots p61$; $n16+n19+n38+n57=CS \dots p62$; $\rightarrow n16+n38=G$;
 $n16+n25+n38+n51=CS \dots p63$; $n16+n27+n38+n49=CS \dots p64$; $\rightarrow n17+n59=n19+n57=n25+n51=n27+n49=H$; $G+H=CS$;

Which pairs have the same sums do we know by these results?

$$\begin{array}{llll} n1+n22+n43+n64=CS \dots p1; & n3+n22+n41+n64=CS \dots p10; & \rightarrow & n1+n43=n3+n41 \\ n2+n23+n44+n61=CS \dots p5; & n4+n23+n42+n61=CS \dots p14; & \rightarrow & n2+n44=n4+n42 \\ n3+n24+n41+n62=CS \dots p9; & n9+n24+n35+n62=CS \dots p36; & \rightarrow & n3+n41=n9+n35 \\ n4+n21+n42+n63=CS \dots p13; & n10+n21+n36+n63=CS \dots p40; & \rightarrow & n4+n42=n10+n36 \\ \dots & \dots & & \dots \end{array}$$

By repeating this kind of analyses we could get the next classification on the way.

** Four Groups of 2x4 Complementary Pairs: CS=130; **

- (1) $n1+n43=n3+n41=n9+n35=n11+n33=A$;
 $n22+n64=n24+n62=n30+n56=n32+n54=B$; $A+B=CS \dots (1)$;
- (2) $n2+n44=n4+n42=n10+n36=n12+n34=C$;
 $n21+n63=n23+n61=n29+n55=n31+n53=D$; $C+D=CS \dots (2)$;
- (3) $n5+n47=n7+n45=n13+n39=n15+n37=E$;
 $n18+n60=n20+n58=n26+n52=n28+n50=F$; $E+F=CS \dots (3)$;
- (4) $n6+n48=n8+n46=n14+n40=n16+n38=G$;
 $n17+n59=n19+n57=n25+n51=n27+n49=H$; $G+H=CS \dots (4)$;

** Algebraic Calculations by applying Composite Conditions: CS=130; **

$$\begin{array}{ll} n3+n41=A; & | \quad n6+n48=G; \\ n2+n44=C; (+ & | \quad n7+n45=E; (+ \\ \hline n2+n3+n41+n44=A+C; & | \quad n6+n7+n45+n48=E+G; \\ \text{But } n2+n3=n42+n43; & | \quad \text{But } n6+n7=n46+n47; \\ n2+n3+n41+n44=n41+n42+n43+n44=CS; & | \quad n6+n7+n45+n48=n45+n46+n47+n48=CS; \\ \text{Therefore } A+C=CS; & | \quad \text{Therefore } E+G=CS; \\ \text{But } A+B=CS; & | \quad \text{But } E+F=CS; \end{array}$$

That means $C=B$; and $A=D$; | That means $G=F$; and $E=H$;

$$\begin{aligned} n1+n43=n3+n41=n9+n35=n11+n33=n21+n63=n23+n61=n29+n55=n31+n53=A; \\ n2+n44=n4+n42=n10+n36=n12+n34=n22+n64=n24+n62=n30+n56=n32+n54=B; \\ A+B=CS \dots (1); \\ n5+n47=n7+n45=n13+n39=n15+n37=n17+n59=n19+n57=n25+n51=n27+n49=E; \\ n6+n48=n8+n46=n14+n40=n16+n38=n18+n60=n20+n58=n26+n52=n28+n50=F; \\ E+F=CS \dots (3); \end{aligned}$$

$$\begin{aligned} n1+n43=A; \\ n5+n47=E; (+ \\ \hline n1+n5+n43+n47=A+E; \\ \text{But } n1+n5=n35+n39 \\ n1+n5+n43+n47=n35+n39+n43+n47=CS; \\ \text{Therefore } A+E=CS; \\ \text{But } A+B=CS; \\ \text{That means } E=B; \text{ and } A=F; \end{aligned}$$

**** Final Conclusion: One Group of 2x16 Complementary Pairs: CS=130; ****

$$\begin{aligned} (1) \quad n1+n43=n3+n41=n6+n48=n8+n46=n9+n35=n11+n33=n14+n40=n16+n38=n18+n60= \\ \{ \quad n20+n58=n21+n63=n23+n61=n26+n52=n28+n50=n29+n55=n31+n53=CSM1; \\ (2) \quad n2+n44=n4+n42=n5+n47=n7+n45=n10+n36=n12+n34=n13+n39=n15+n37=n17+n59= \\ n19+n57=n22+n64=n24+n62=n25+n51=n27+n49=n30+n56=n32+n54=CSM2; \\ \text{and } CSM1+CSM2=CS; \end{aligned}$$

Thus we have got the last group of 2x16 Complementary Pairs on the pan-triagonals. The top pair of this group is $n1+n43$, the Origin and the Panmagic Symmetric Center. It makes another 'Reserved Seat' for the fixed followers to $n1$ again.

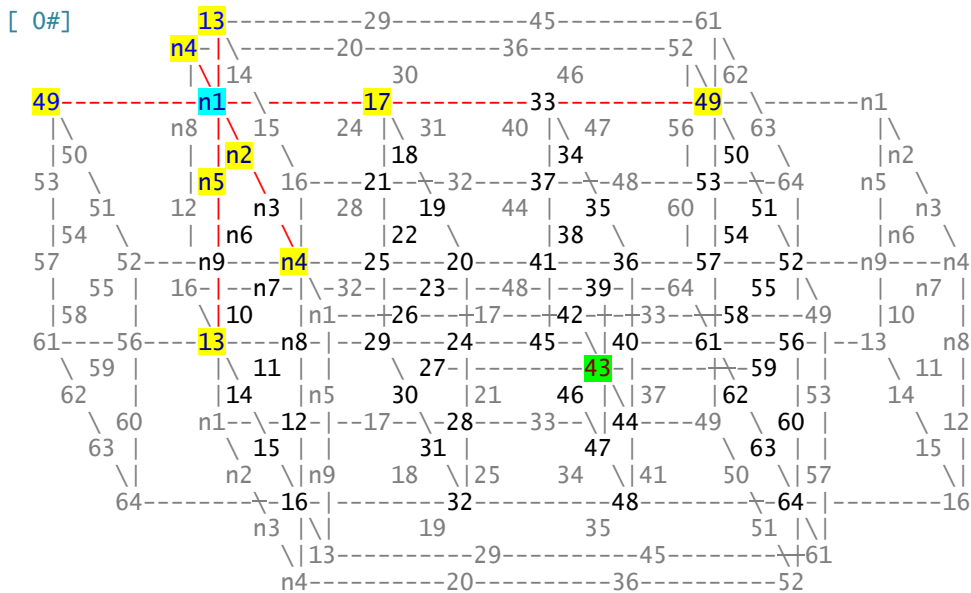
It has such the same 'structure' as the former 6 groups of 32 Complementary Pairs that we can collect and include it into the following conclusive list.

**** The Final Conclusions Inclusive ****

*** 7 Groups of 2x16 Complementary Pairs of Composite Pan-triagonal MC4: CS=130; ***

$$\begin{aligned} (1) \quad n1+n2=n7+n8=n9+n10=n15+n16=n19+n20=n21+n22=n27+n28=n29+n30= \\ n33+n34=n39+n40=n41+n42=n47+n48=n51+n52=n53+n54=n59+n60=n61+n62=CS12; \\ n3+n4=n5+n6=n11+n12=n13+n14=n17+n18=n23+n24=n25+n26=n31+n32= \quad \} CS12+CS34=CS; \\ n35+n36=n37+n38=n43+n44=n45+n46=n49+n50=n55+n56=n57+n58=n63+n64=CS34; \\ (2) \quad n1+n4=n6+n7=n9+n12=n14+n15=n18+n19=n21+n24=n26+n27=n29+n32= \\ n33+n36=n38+n39=n41+n44=n46+n47=n50+n51=n53+n56=n58+n59=n61+n64=CS14; \\ n2+n3=n5+n8=n10+n11=n13+n16=n17+n20=n22+n23=n25+n28=n30+n31= \quad \} CS14+CS23=CS; \\ n34+n35=n37+n40=n42+n43=n45+n48=n49+n52=n54+n55=n57+n60=n62+n63=CS23; \\ (3) \quad n1+n5=n3+n7=n10+n14=n12+n16=n18+n22=n20+n24=n25+n29=n27+n31= \\ n33+n37=n35+n39=n42+n46=n44+n48=n50+n54=n52+n56=n57+n61=n59+n63=CS15; \\ n2+n6=n4+n8=n9+n13=n11+n15=n17+n21=n19+n23=n26+n30=n28+n32= \quad \} CS15+CS26=CS; \\ n34+n38=n36+n40=n41+n45=n43+n47=n49+n53=n51+n55=n58+n62=n60+n64=CS26; \\ (4) \quad n1+n13=n3+n15=n6+n10=n8+n12=n18+n30=n20+n32=n21+n25=n23+n27= \\ n33+n45=n35+n47=n38+n42=n40+n44=n50+n62=n52+n64=n53+n57=n55+n59=CS113; \\ n2+n14=n4+n16=n5+n9=n7+n11=n17+n29=n19+n31=n22+n26=n24+n28= \quad \} CS113+CS214=CS; \\ n34+n46=n36+n48=n37+n41=n39+n43=n49+n61=n51+n63=n54+n58=n56+n60=CS214; \\ (5) \quad n1+n17=n3+n19=n6+n22=n8+n24=n9+n25=n11+n27=n14+n30=n16+n32= \\ n34+n50=n36+n52=n37+n53=n39+n55=n42+n58=n44+n60=n45+n61=n47+n63=CS117; \\ n2+n18=n4+n20=n5+n21=n7+n23=n10+n26=n12+n28=n13+n29=n15+n31= \quad \} CS117+CS218=CS; \\ n33+n49=n35+n51=n38+n54=n40+n56=n41+n57=n43+n59=n46+n62=n48+n64=CS218; \\ (6) \quad n1+n49=n3+n51=n6+n54=n8+n56=n9+n57=n11+n59=n14+n62=n16+n64= \\ n18+n34=n20+n36=n21+n37=n23+n39=n26+n42=n28+n44=n29+n45=n31+n47=CS149; \\ n2+n50=n4+n52=n5+n53=n7+n55=n10+n58=n12+n60=n13+n61=n15+n63= \quad \} CS149+CS250=CS; \\ n17+n33=n19+n35=n22+n38=n24+n40=n25+n41=n27+n43=n30+n46=n32+n48=CS250; \\ (7) \quad n1+n43=n3+n41=n6+n48=n8+n46=n9+n35=n11+n33=n14+n40=n16+n38= \\ n18+n60=n20+n58=n21+n63=n23+n61=n26+n52=n28+n50=n29+n55=n31+n53=CS143; \\ n2+n44=n4+n42=n5+n47=n7+n45=n10+n36=n12+n34=n13+n39=n15+n37= \quad \} CS143+CS244=CS; \\ n17+n59=n19+n57=n22+n64=n24+n62=n25+n51=n27+n49=n30+n56=n32+n54=CS244; \end{aligned}$$

** Basic Form in the Extended Space **



#8. Study the Natural Numbers 1~64 next.

Our Composite Pan-magic Cube 444 needs these 7 groups of 2x16 Complementary Pairs after all. But could we have so many real pairs made by the consecutive Natural Numbers 1~64, using all without any duplication or any lack of them in each group?

We have to study the natural numbers 1~64 next. But, how do we have to do that?

First of all let's make any complementary pairs whose sums are equal.

Suppose any combinations of 2 sums CS and DS always accepting $CS+DS=130$;

Watch the following result list below in which I have collected those pairs.

** Possible Complementary Pairs made by the Natural Numbers 1~64 **
 [Listed in order according to the Sums of Pairs]

- CS=28: (1,27), (2,26), (3,25), (4,24), (5,23), (6,22), (7,21), (8,20),
 { (9,19), (10,18), (11,17), (12,16), (13,15),
 DS=102: (64,38), (63,39), (62,40), (61,41), (60,42), (59,43), (58,44), (57,45),
 (56,46), (55,47), (54,48), (53,49), (52,50),
- CS=29: (1,28), (2,27), (3,26), (4,25), (5,24), (6,23), (7,22), (8,21),
 { (9,20), (10,19), (11,18), (12,17), (13,16), (14,15),
 DS=101: (64,37), (63,38), (62,39), (61,40), (60,41), (59,42), (58,43), (57,44),
 (56,45), (55,46), (54,47), (53,48), (52,49), (51,50),
- CS=30: (1,29), (2,28), (3,27), (4,26), (5,25), (6,24), (7,23), (8,22),
 { (9,21), (10,20), (11,19), (12,18), (13,17), (14,16),
 DS=100: (64,36), (63,37), (62,38), (61,39), (60,40), (59,41), (58,42), (57,43),
 (56,44), (55,45), (54,46), (53,47), (52,48), (51,49),
- CS=31: (1,30), (2,29), (3,28), (4,27), (5,26), (6,25), (7,24), (8,23),
 { (9,22), (10,21), (11,20), (12,19), (13,18), (14,17), (15,16),
 DS=99: (64,35), (63,36), (62,37), (61,38), (60,39), (59,40), (58,41), (57,42),
 (56,43), (55,44), (54,45), (53,46), (52,47), (51,48), (50,49),
- CS=32: (1,31), (2,30), (3,29), (4,28), (5,27), (6,26), (7,25), (8,24),
 { (9,23), (10,22), (11,21), (12,20), (13,19), (14,18), (15,17),
 DS=98: (64,34), (63,35), (62,36), (61,37), (60,38), (59,39), (58,40), (57,41),
 (56,42), (55,43), (54,44), (53,45), (52,46), (51,47), (50,48),
- CS=33: (1,32), (2,31), (3,30), (4,29), (5,28), (6,27), (7,26), (8,25),
 { (9,24), (10,23), (11,22), (12,21), (13,20), (14,19), (15,18), (16,17),
 DS=97: (64,33), (63,34), (62,35), (61,36), (60,37), (59,38), (58,39), (57,40),
 (56,41), (55,42), (54,43), (53,44), (52,45), (51,46), (50,47), (49,48); ... OK!

CS=34: (1,33), (3,31), (4,30), (5,29), (6,28), (7,27), (8,26), (9,25),
 { (10,24), (11,23), (12,22), (13,21), (14,20), (15,19), (16,18),
DS=96: (64,32), (62,34), (61,35), (60,36), (59,37), (58,38), (57,39), (56,40),
 (55,41), (54,42), (53,43), (52,44), (51,45), (50,46), (49,47),

CS=35: (1,34), (2,33), (5,30), (6,29), (7,28), (8,27), (9,26), (10,25),
 { (11,24), (12,23), (13,22), (14,21), (15,20), (16,19), (17,18),
DS=95: (64,31), (63,32), (60,35), (59,36), (58,37), (57,38), (56,39), (55,40),
 (54,41), (53,42), (52,43), (51,44), (50,45), (49,46), (48,47),

CS=36: (1,35), (2,34), (3,33), (7,29), (8,28), (9,27), (10,26), (11,25),
 { (12,24), (13,23), (14,22), (15,21), (16,20), (17,19),
DS=94: (64,30), (63,31), (62,32), (58,36), (57,37), (56,38), (55,39), (54,40),
 (53,41), (52,42), (51,43), (50,44), (49,45), (48,46),

CS=37: (1,36), (2,35), (3,34), (4,33), (9,28), (10,27), (11,26), (12,25),
 { (13,24), (14,23), (15,22), (16,21), (17,20), (18,19),
DS=93: (64,29), (63,30), (62,31), (61,32), (56,37), (55,38), (54,39), (53,40),
 (52,41), (51,42), (50,43), (49,44), (48,45), (47,46),

CS=38: (1,37), (2,36), (3,35), (4,34), (5,33), (11,27), (12,26), (13,25),
 { (14,24), (15,23), (16,22), (17,21), (18,20),
DS=92: (64,28), (63,29), (62,30), (61,31), (60,32), (54,38), (53,39), (52,40),
 (51,41), (50,42), (49,43), (48,44), (47,45),

CS=39: (1,38), (2,37), (3,36), (4,35), (5,34), (6,33), (13,26), (14,25),
 { (15,24), (16,23), (17,22), (18,21), (19,20),
DS=91: (64,27), (63,28), (62,29), (61,30), (60,31), (59,32), (52,39), (51,40),
 (50,41), (49,42), (48,43), (47,44), (46,45),

CS=40: (1,39), (2,38), (3,37), (4,36), (5,35), (6,34), (7,33), (15,25),
 { (16,24), (17,23), (18,22), (19,21),
DS=90: (64,26), (63,27), (62,28), (61,29), (60,30), (59,31), (58,32), (50,40),
 (49,41), (48,42), (47,43), (46,44),

CS=41: (1,40), (2,39), (3,38), (4,37), (5,36), (6,35), (7,34), (8,33),
 { (17,24), (18,23), (19,22), (20,21),
DS=89: (64,25), (63,26), (62,27), (61,28), (60,29), (59,30), (58,31), (57,32),
 (48,41), (47,42), (46,43), (45,44),

CS=42: (1,41), (2,40), (3,39), (4,38), (5,37), (6,36), (7,35), (8,34),
 { (9,33), (19,23), (20,22),
DS=88: (64,24), (63,25), (62,26), (61,27), (60,28), (59,29), (58,30), (57,31),
 (56,32), (46,42), (45,43),

CS=43: (1,42), (2,41), (3,40), (4,39), (5,38), (6,37), (7,36), (8,35),
 { (9,34), (10,33), (21,22),
DS=87: (64,23), (63,24), (62,25), (61,26), (60,27), (59,28), (58,29), (57,30),
 (56,31), (55,32), (44,43),

CS=44: (1,43), (2,42), (3,41), (4,40), (5,39), (6,38), (7,37), (8,36),
 { (9,35), (10,34), (11,33),
DS=86: (64,22), (63,23), (62,24), (61,25), (60,26), (59,27), (58,28), (57,29),
 (56,30), (55,31), (54,32),

CS=45: (1,44), (2,43), (3,42), (4,41), (5,40), (6,39), (7,38), (8,37),
 { (9,36), (10,35), (11,34), (12,33),
DS=85: (64,21), (63,22), (62,23), (61,24), (60,25), (59,26), (58,27), (57,28),
 (56,29), (55,30), (54,31), (53,32),

CS=46: (1,45), (2,44), (3,43), (4,42), (5,41), (6,40), (7,39), (8,38),
 { (9,37), (10,36), (11,35), (12,34), (13,33),
DS=84: (64,20), (63,21), (62,22), (61,23), (60,24), (59,25), (58,26), (57,27),
 (56,28), (55,29), (54,30), (53,31), (52,32),

CS=47: (1,46), (2,45), (3,44), (4,43), (5,42), (6,41), (7,40), (8,39),
 { (9,38), (10,37), (11,36), (12,35), (13,34), (14,33),

DS=83: (64,19), (63,20), (62,21), (61,22), (60,23), (59,24), (58,25), (57,26),
 (56,27), (55,28), (54,29), (53,30), (52,31), (51,32),
 CS=48: (1,47), (2,46), (3,45), (4,44), (5,43), (6,42), (7,41), (8,40),
 { (9,39), (10,38), (11,37), (12,36), (13,35), (14,34), (15,33),
 DS=82: (64,18), (63,19), (62,20), (61,21), (60,22), (59,23), (58,24), (57,25),
 (56,26), (55,27), (54,28), (53,29), (52,30), (51,31), (50,32),
 CS=49: (1,48), (2,47), (3,46), (4,45), (5,44), (6,43), (7,42), (8,41),
 { (9,40), (10,39), (11,38), (12,37), (13,36), (14,35), (15,34), (16,33),
 DS=81: (64,17), (63,18), (62,19), (61,20), (60,21), (59,22), (58,23), (57,24),
 (56,25), (55,26), (54,27), (53,28), (52,29), (51,30), (50,31), (49,32); ... OK!
 CS=50: (1,49), (2,48), (3,47), (4,46), (5,45), (6,44), (7,43), (8,42),
 { (9,41), (10,40), (11,39), (12,38), (13,37), (14,36), (15,35),
 DS=80: (64,16), (63,17), (62,18), (61,19), (60,20), (59,21), (58,22), (57,23),
 (56,24), (55,25), (54,26), (53,27), (52,28), (51,29), (50,30),
 CS=51: (1,50), (2,49), (3,48), (4,47), (5,46), (6,45), (7,44), (8,43),
 { (9,42), (10,41), (11,40), (12,39), (13,38), (14,37),
 DS=79: (64,15), (63,16), (62,17), (61,18), (60,19), (59,20), (58,21), (57,22),
 (56,23), (55,24), (54,25), (53,26), (52,27), (51,28),
 CS=52: (1,51), (2,50), (3,49), (4,48), (5,47), (6,46), (7,45), (8,44),
 { (9,43), (10,42), (11,41), (12,40), (13,39),
 DS=78: (64,14), (63,15), (62,16), (61,17), (60,18), (59,19), (58,20), (57,21),
 (56,22), (55,23), (54,24), (53,25), (52,26),
 CS=53: (1,52), (2,51), (3,50), (4,49), (5,48), (6,47), (7,46), (8,45),
 { (9,44), (10,43), (11,42), (12,41), (25,28), (26,27),
 DS=77: (64,13), (63,14), (62,15), (61,16), (60,17), (59,18), (58,19), (57,20),
 (56,21), (55,22), (54,23), (53,24), (40,37), (39,38),
 CS=54: (1,53), (2,52), (3,51), (4,50), (5,49), (6,48), (7,47), (8,46),
 { (9,45), (10,44), (11,43), (23,31), (24,30), (25,29), (26,28),
 DS=76: (64,12), (63,13), (62,14), (61,15), (60,16), (59,17), (58,18), (57,19),
 (56,20), (55,21), (54,22), (42,34), (41,35), (40,36), (39,37),
 CS=55: (1,54), (2,53), (3,52), (4,51), (5,50), (6,49), (7,48), (8,47),
 { (9,46), (10,45), (21,34), (22,33), (25,30), (26,29), (27,28),
 DS=75: (64,11), (63,12), (62,13), (61,14), (60,15), (59,16), (58,17), (57,18),
 (56,19), (55,20), (44,31), (43,32), (40,35), (39,36), (38,37),
 CS=56: (1,55), (2,54), (3,53), (4,52), (5,51), (6,50), (7,49), (8,48),
 { (9,47), (19,37), (20,36), (21,35), (22,34), (23,33),
 DS=74: (64,10), (63,11), (62,12), (61,13), (60,14), (59,15), (58,16), (57,17),
 (56,18), (46,28), (45,29), (44,30), (43,31), (42,32),
 CS=57: (1,56), (2,55), (3,54), (4,53), (5,52), (6,51), (7,50), (8,49),
 { (17,40), (18,39), (19,38), (20,37), (21,36), (22,35), (23,34), (24,33),
 DS=73: (64,9), (63,10), (62,11), (61,12), (60,13), (59,14), (58,15), (57,16),
 (48,25), (47,26), (46,27), (45,28), (44,29), (43,30), (42,31), (41,32); ... OK!
 CS=58: (1,57), (2,56), (3,55), (4,54), (5,53), (6,52), (7,51), (15,43),
 { (16,42), (17,41), (18,40), (19,39), (20,38), (21,37),
 DS=72: (64,8), (63,9), (62,10), (61,11), (60,12), (59,13), (58,14), (50,22),
 (49,23), (48,24), (47,25), (46,26), (45,27), (44,28),
 CS=59: (1,58), (2,57), (3,56), (4,55), (5,54), (6,53), (13,46), (14,45),
 { (15,44), (16,43), (17,42), (18,41), (25,34), (26,33), (29,30),
 DS=71: (64,7), (63,8), (62,9), (61,10), (60,11), (59,12), (52,19), (51,20),
 (50,21), (49,22), (48,23), (47,24), (40,31), (39,32), (36,35),
 CS=60: (1,59), (2,58), (3,57), (4,56), (5,55), (11,49), (12,48), (13,47),
 { (14,46), (15,45), (21,39), (22,38), (23,37), (24,36), (25,35),
 DS=70: (64,6), (63,7), (62,8), (61,9), (60,10), (54,16), (53,17), (52,18),
 (51,19), (50,20), (44,26), (43,27), (42,28), (41,29), (40,30),

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CS=61: (1,60), (2,59), (3,58), (4,57), (9,52), (10,51), (11,50), (12,49),
{ (17,44), (18,43), (19,42), (20,41), (25,36), (26,35), (27,34), (28,33),
DS=69: (64,5), (63,6), (62,7), (61,8), (56,13), (55,14), (54,15), (53,16),
(48,21), (47,22), (46,23), (45,24), (40,29), (39,30), (38,31), (37,32); ... OK!

CS=62: (1,61), (2,60), (3,59), (7,55), (8,54), (9,53), (13,49), (14,48),
{ (15,47), (19,43), (20,42), (21,41), (25,37), (26,36), (27,35),
DS=68: (64,4), (63,5), (62,6), (58,10), (57,11), (56,12), (52,16), (51,17),
(50,18), (46,22), (45,23), (44,24), (40,28), (39,29), (38,30),

CS=63: (1,62), (2,61), (5,58), (6,57), (9,54), (10,53), (13,50), (14,49),
{ (17,46), (18,45), (21,42), (22,41), (25,38), (26,37), (29,34), (30,33),
DS=67: (64,3), (63,4), (60,7), (59,8), (56,11), (55,12), (52,15), (51,16),
(48,19), (47,20), (44,23), (43,24), (40,27), (39,28), (36,31), (35,32); ... OK!

CS=64: (1,63), (3,61), (5,59), (7,57), (9,55), (11,53), (13,51), (15,49),
{ (17,47), (19,45), (21,43), (23,41), (25,39), (27,37), (29,35), (31,33),
DS=66: (64,2), (62,4), (60,6), (58,8), (56,10), (54,12), (52,14), (50,16),
(48,18), (46,20), (44,22), (42,24), (40,26), (38,28), (36,30), (34,32); ... OK!

CS=DS=65: (1,64), (2,63), (3,62), (4,61), (5,60), (6,59), (7,58), (8,57),
(9,56), (10,55), (11,54), (12,53), (13,52), (14,51), (15,50), (16,49),
(17,48), (18,47), (19,46), (20,45), (21,44), (22,43), (23,42), (24,41),
(25,40), (26,39), (27,38), (28,37), (29,36), (30,35), (31,34), (32,33); ... OK!

```

[Counts of Successful Combinations = 7]

Thus I could find what we have wanted at last: 7 groups of 2x16 complementary pairs could satisfy our request perfectly. In each group of them the 32 pairs have all the natural numbers 1~64 with neither duplication nor lack of any number.

Let me show you the compact list of them for our final conclusion as follows.

**** Compact List of Successful Combinations ****

```

CS=33: (1,32), (2,31), (3,30), (4,29), (5,28), (6,27), (7,26), (8,25),
{ (9,24), (10,23), (11,22), (12,21), (13,20), (14,19), (15,18), (16,17),
DS=97: (33,64), (34,63), (35,62), (36,61), (37,60), (38,59), (39,58), (40,57),
(41,56), (42,55), (43,54), (44,53), (45,52), (46,51), (47,50), (48,49); ... OK!

CS=49: (1,48), (2,47), (3,46), (4,45), (5,44), (6,43), (7,42), (8,41),
{ (9,40), (10,39), (11,38), (12,37), (13,36), (14,35), (15,34), (16,33),
DS=81: (17,64), (18,63), (19,62), (20,61), (21,60), (22,59), (23,58), (24,57),
(25,56), (26,55), (27,54), (28,53), (29,52), (30,51), (31,50), (32,49); ... OK!

CS=57: (1,56), (2,55), (3,54), (4,53), (5,52), (6,51), (7,50), (8,49),
{ (17,40), (18,39), (19,38), (20,37), (21,36), (22,35), (23,34), (24,33),
DS=73: (9,64), (10,63), (11,62), (12,61), (13,60), (14,59), (15,58), (16,57),
(25,48), (26,47), (27,46), (28,45), (29,44), (30,43), (31,42), (32,41); ... OK!

CS=61: (1,60), (2,59), (3,58), (4,57), (9,52), (10,51), (11,50), (12,49),
{ (17,44), (18,43), (19,42), (20,41), (25,36), (26,35), (27,34), (28,33),
DS=69: (5,64), (6,63), (7,62), (8,61), (13,56), (14,55), (15,54), (16,53),
(21,48), (22,47), (23,46), (24,45), (29,40), (30,39), (31,38), (32,37); ... OK!

CS=63: (1,62), (2,61), (5,58), (6,57), (9,54), (10,53), (13,50), (14,49),
{ (17,46), (18,45), (21,42), (22,41), (25,38), (26,37), (29,34), (30,33),
DS=67: (3,64), (4,63), (7,60), (8,59), (11,56), (12,55), (15,52), (16,51),
(19,48), (20,47), (23,44), (24,43), (27,40), (28,39), (31,36), (32,35); ... OK!

CS=64: (1,63), (3,61), (5,59), (7,57), (9,55), (11,53), (13,51), (15,49),
{ (17,47), (19,45), (21,43), (23,41), (25,39), (27,37), (29,35), (31,33),
DS=66: (2,64), (4,62), (6,60), (8,58), (10,56), (12,54), (14,52), (16,50),
(18,48), (20,46), (22,44), (24,42), (26,40), (28,38), (30,36), (32,34); ... OK!

CS=DS=65: (1,64), (2,63), (3,62), (4,61), (5,60), (6,59), (7,58), (8,57),
(9,56), (10,55), (11,54), (12,53), (13,52), (14,51), (15,50), (16,49),

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(17,48), (18,47), (19,46), (20,45), (21,44), (22,43), (23,42), (24,41),
 (25,40), (26,39), (27,38), (28,37), (29,36), (30,35), (31,34), (32,33); ... OK!

** Calculated and Listed by Kanji Setsuda
 on May.16, 2007 with MacOSX & Xcode 2 **

Just as you see, the 7 top pairs of those groups actually specify the real members for the 7 fixed followers to the number 1. Yes, {32, 48, 56, 60, 62, 63 and 64} are always the 'good old fellows' to number 1, aren't they?

It is the consecutive Natural Numbers 1~64 that can exactly specify their team.

I had better say, it is the combination of two reasons that makes such a 'miracle' happen to exist: (1) the precise structure of 'C&P' MC4 with so many Complementary Pairs as 7x2x16, and (2) the real specification from the Natural Numbers 1~64.

I think the concordance is very important, between (1) the request of 7 groups of Complementary Pairs by the object 'C&P' MC4 and (2) the supply of 7 real groups of Complementary Pairs by the Natural Numbers 1~64. It surely makes the miracle exist.

This is one of the conclusions of my recent study of 'C&P' MC4.

#9. Prove 5040 x 64 = 322560 by any Transformation Method

The total count of primitive solutions is 322560, and it could be explained as:

$$322560 = 5040 \times 64;$$

(Solution Counts ↑ when n1=1) | (64 means the Count of Positions
 (Permutation: $7P7=7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$) | where number 1 could go)

Let's prove the meaning of this equation directly by any deductive method.

How about using any transformation method?

I drew what I have in my mind in the next conceptual diagrams as below.

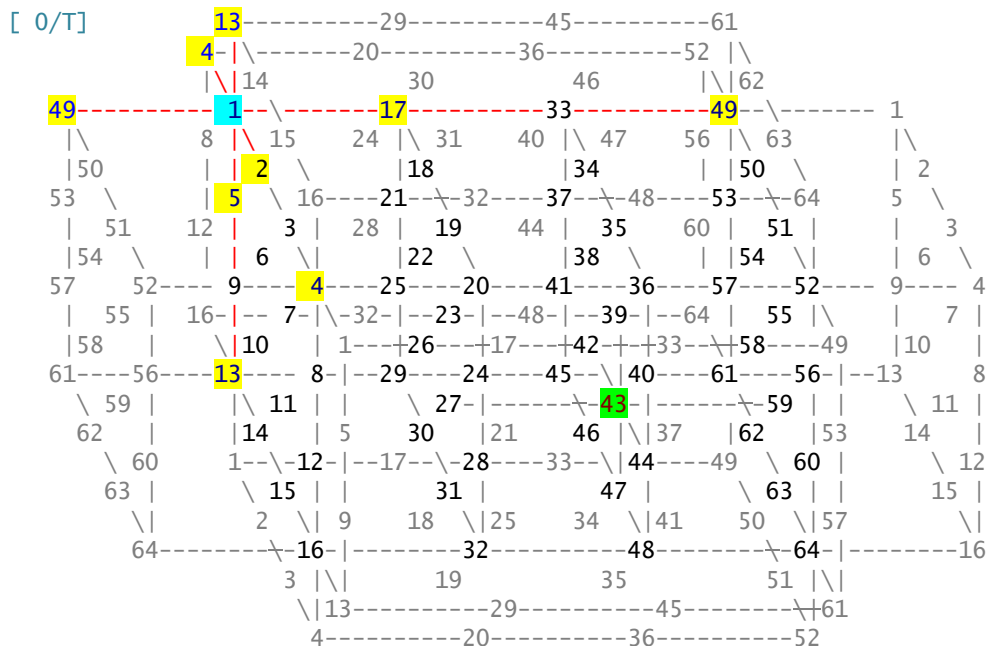
I want to move number 1 to n1, n2, n3, n4, n5, ..., n63, n64 one step by one, and also move the other contents around 1 appropriately onto around the new positions.

Though I drew only a part of the 63 transformations, you could easily imagine all.

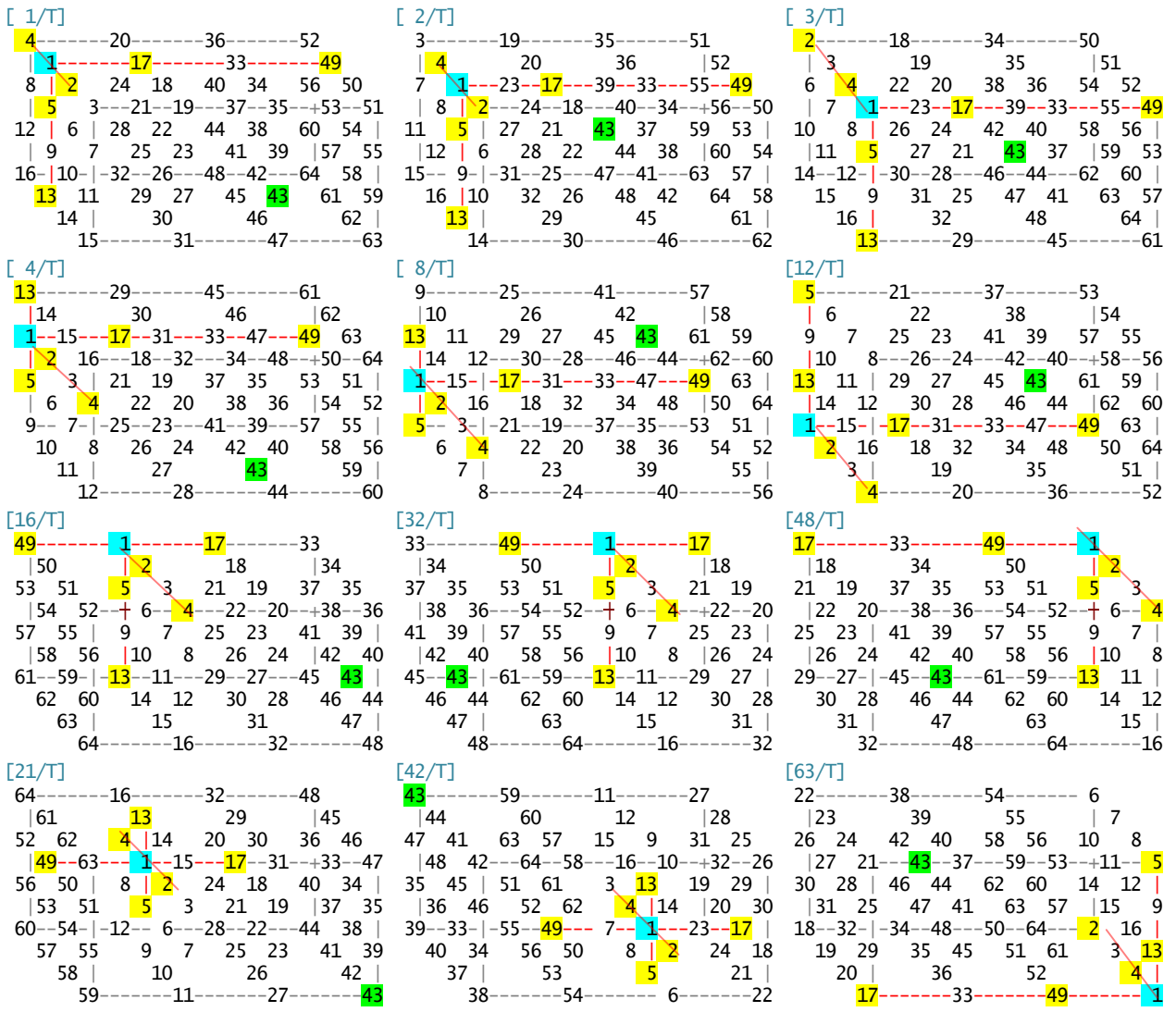
Don't you know such a well-known method of transformation as this?

** Conceptual Diagrams of Transformation Method **

[Basic Form of CPMC4 in the Extended Space]

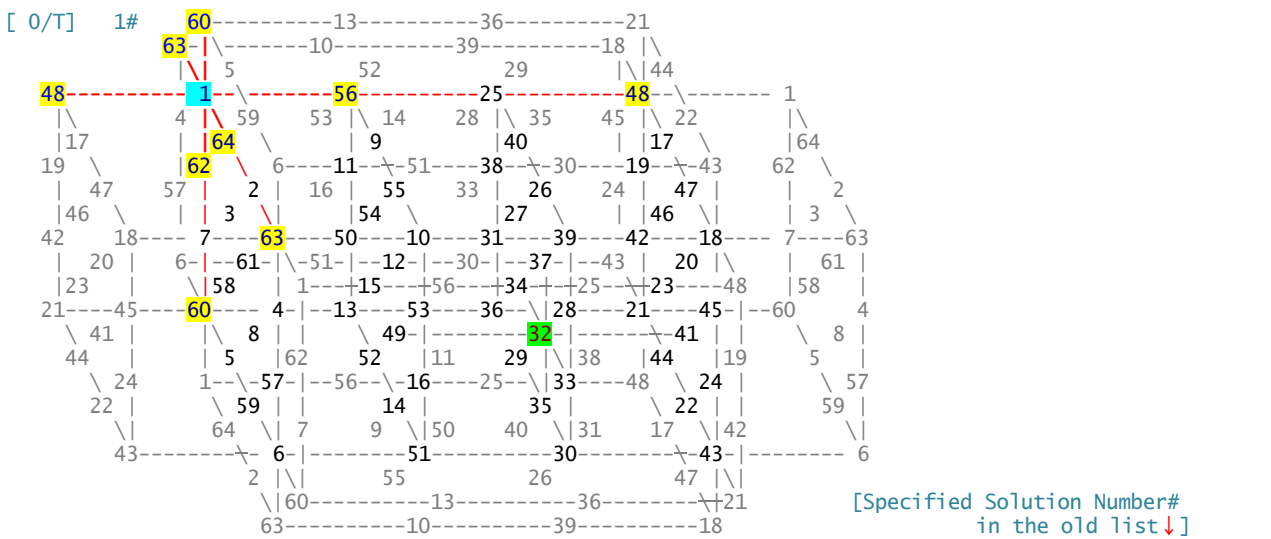


[Supposed Results of Transformation]



Watch every essential part of cubes carefully, especially how every row, column and pillar must be moved. You could easily imagine all what I have in my mind. This is just the same with the well-known Pan-magic Plane Shifting Transformation. Let's transform the Basic Data when n1=1 by this method and reconstruct all.

** Reconstruction of CPMC4 by Pan-magic Plane Shifting Transformation **
 ** Abstract List of Basic Data when n1=1 and their 63 Transformations **



[1/T] 317520#
 63 1 10 56 39 25 48
 4 64 53 9 28 40 45 17
 62 2 11 55 38 26 19 47
 57 3 16 54 33 27 24 46
 7 61 50 12 31 37 42 20
 6 58 51 15 30 34 43 23
 60 8 13 49 36 32 21 41
 5 52 29 44
 59 14 35 22

[2/T] 5161#
 2 55 26 47
 63 10 39 18
 61 1 12 56 37 25 20 48
 4 64 53 9 28 40 45 17
 8 62 49 11 32 38 41 19
 57 3 16 54 33 27 24 46
 59 7 14 50 35 31 22 42
 6 58 51 15 30 34 43 23
 60 13 36 21
 5 52 29 44

[3/T] 322440#
 64 9 40 17
 2 55 26 47
 3 63 54 10 27 39 46 18
 61 1 12 56 37 25 20 48
 58 4 15 53 34 28 23 45
 8 62 49 11 32 38 41 19
 5 57 52 16 29 33 44 24
 59 7 14 50 35 31 22 42
 6 51 30 43
 60 13 36 21

[4/T] 302256#
 60 13 36 21
 5 52 29 44
 1 59 56 14 25 35 48 22
 64 6 9 51 40 30 17 43
 62 2 11 55 38 26 19 47
 3 63 54 10 27 39 46 18
 7 61 50 12 31 37 42 20
 58 4 15 53 34 28 23 45
 8 49 32 41
 57 16 33 24

[5/T] 25345#
 6 51 30 43
 60 13 36 21
 63 5 10 52 39 29 18 44
 1 59 56 14 25 35 48 22
 4 64 53 9 28 40 45 17
 62 2 11 55 38 26 19 47
 57 3 16 54 33 27 24 46
 7 61 50 12 31 37 42 20
 58 15 34 23
 8 49 32 41

[6/T] 297096#
 59 14 35 22
 6 51 30 43
 2 60 55 13 26 36 47 21
 63 5 10 52 39 29 18 44
 61 1 12 56 37 25 20 48
 4 64 53 9 28 40 45 17
 8 62 49 11 32 38 41 19
 57 3 16 54 33 27 24 46
 7 50 31 42
 58 15 34 23

[7/T] 20425#
 5 52 29 44
 59 14 35 22
 64 6 9 51 40 30 17 43
 2 60 55 13 26 36 47 21
 3 63 54 10 27 39 46 18
 61 1 12 56 37 25 20 48
 58 4 15 53 34 28 23 45
 8 62 49 11 32 38 41 19
 57 16 33 24
 7 50 31 42

[8/T] 30535#
 7 50 31 42
 58 15 34 23
 60 8 13 49 36 32 21 41
 5 57 52 16 29 33 44 24
 1 59 56 14 25 35 48 22
 4 64 53 9 28 40 45 17
 62 2 11 55 38 26 19 47
 3 63 54 10 27 39 46 18
 61 12 37 20
 4 53 28 45

[9/T] 286986#
 57 16 33 24
 7 50 31 42
 6 58 51 15 30 34 43 23
 60 8 13 49 36 32 21 41
 63 5 10 52 39 29 18 44
 1 59 56 14 25 35 48 22
 4 64 53 9 28 40 45 17
 62 2 11 55 38 26 19 47
 3 54 27 46
 61 12 37 20

[10/T] 35695#
 8 49 32 41
 57 16 33 24
 59 7 14 50 35 31 22 42
 6 58 51 15 30 34 43 23
 2 60 55 13 26 36 47 21
 63 5 10 52 39 29 18 44
 61 1 12 56 37 25 20 48
 4 64 53 9 28 40 45 17
 62 2 11 55 38 26 19 47
 3 54 27 46

[11/T] 291906#
 58 15 34 23
 8 49 32 41
 5 57 52 16 29 33 44 24
 59 7 14 50 35 31 22 42
 64 6 9 51 40 30 17 43
 2 60 55 13 26 36 47 21
 3 63 54 10 27 39 46 18
 61 1 12 56 37 25 20 48
 4 53 28 45
 62 11 38 19

[12/T] 312330#
 62 11 38 19
 3 54 27 46
 7 61 50 12 31 37 42 20
 58 4 15 53 34 28 23 45
 60 8 13 49 36 32 21 41
 5 57 52 16 29 33 44 24
 1 59 56 14 25 35 48 22
 4 64 53 9 28 40 45 17
 2 55 26 47
 63 10 39 18

[13/T] 15271#
 4 53 28 45
 62 11 38 19
 57 3 16 54 33 27 24 46
 7 61 50 12 31 37 42 20
 6 58 51 15 30 34 43 23
 60 8 13 49 36 32 21 41
 63 5 10 52 39 29 18 44
 1 59 56 14 25 35 48 22
 64 9 40 17
 2 55 26 47

[14/T] 307170#
 61 12 37 20
 4 53 28 45
 8 62 49 11 32 38 41 19
 57 3 16 54 33 27 24 46
 59 7 14 50 35 31 22 42
 6 58 51 15 30 34 43 23
 2 60 55 13 26 36 47 21
 63 5 10 52 39 29 18 44
 1 59 56 14 25 35 48 22
 64 9 40 17

[15/T] 10351#
 3 54 27 46
 61 12 37 20
 58 4 15 53 34 28 23 45
 8 62 49 11 32 38 41 19
 5 57 52 16 29 33 44 24
 59 7 14 50 35 31 22 42
 64 6 9 51 40 30 17 43
 2 60 55 13 26 36 47 21
 63 10 39 18
 1 59 56 14 25 35 48 22

[16/T] 241768#
 48 1 10 56 39 25 48
 17 64 9 40
 19 47 62 2 11 55 38 26
 46 18 3 63 54 10 27 39
 42 20 7 61 50 12 31 37
 23 45 58 4 15 53 34 28
 21 41 60 8 13 49 36 32 21 41
 44 24 5 57 52 16 29 33
 22 59 14 35
 43 6 51 30

[17/T] 85833#
 18 63 10 39 25
 48 1 10 56 39 25 48
 45 17 4 64 53 9 28 40
 19 47 62 2 11 55 38 26
 24 46 57 3 16 54 33 27
 42 20 7 61 50 12 31 37
 43 23 6 58 51 15 30 34
 21 41 60 8 13 49 36 32
 44 5 52 29
 22 59 14 35

[18/T] 236608#
 47 2 55 26 47
 18 63 10 39
 20 48 61 1 12 56 37 25
 45 17 4 64 53 9 28 40
 41 19 8 62 49 11 32 38
 24 46 57 3 16 54 33 27
 22 42 59 7 14 50 35 31
 43 23 6 58 51 15 30 34
 21 60 13 36
 44 5 52 29

[19/T] 80913#
 17 64 9 40
 47 2 55 26
 46 18 3 63 54 10 27 39
 20 48 61 1 12 56 37 25
 23 45 58 4 15 53 34 28
 41 19 8 62 49 11 32 38
 44 24 5 57 52 16 29 33
 22 42 59 7 14 50 35 31
 43 6 51 30
 21 60 13 36

[20/T] 101097#
 21 60 13 36
 44 5 52 29
 48 22 1 59 56 14 25 35
 17 43 64 6 9 51 40 30
 19 47 62 2 11 55 38 26
 46 18 3 63 54 10 27 39
 42 20 7 61 50 12 31 37
 23 45 58 4 15 53 34 28
 41 8 49 32
 24 57 16 33

[21/T] 216424#
 43 6 51 30
 21 60 13 36
 18 44 63 5 10 52 39 29
 48 22 1 59 56 14 25 35
 45 17 4 64 53 9 28 40
 19 47 62 2 11 55 38 26
 24 46 57 3 16 54 33 27
 42 20 7 61 50 12 31 37
 23 58 15 34
 41 8 49 32

[43/T] 170641# 34-----23-----58-----15
| 32 41 8 49
29 33 44 24 5 57 52 16
| 35 31--22--42--59--7--14--50
40 30 | 17 43 64 6 9 51 |
| 26 36 47 21 2 60 55 13
27--39--|46--18--3--63--|54 10 |
37 25 20 48--61--1--12--56
28 | 45 4 | 53 |
38-----19-----62-----11

[44/T] 191065# 38-----19-----62-----11
| 27 46 3 54
31 37 42 20 7 61 50 12
| 34 28--23--45--58--4--15--53
36 32 | 21 41 60 8 13 49 |
| 29 33 44 24 5 57 52 16
25--35--|48--22--1--59--56 14 |
40 30 | 17 43 64 6 9 51 |
26 | 47 2 55 |
39-----18-----63-----10

[45/T] 136536# 28-----45-----4-----53
| 38 19 62 | 11
33 27 24 46 57 | 3 16 54
| 31 37--42--20--7--61--50--12
30 34 | 43 23 6 58 51 15 |
| 36 32 21 41 60 8 | 13 49
39--29--|18--44--63--|5--10 52 |
25 35 48--22--1--59--56 14
40 | 17 64 9 |
26-----47-----2-----55

[46/T] 185905# 37-----20-----61-----12
| 28 45 4 53
32 38 41 19 8 62 49 11
| 33 27--24--46--57--3--16--54
35 31 | 22 42 59 7 14 50 |
| 30 34 43 23 6 58 51 15
26--36--|47--21--2--60--55 13 |
39 29 18 44 63 | 5 10 52
25 | 48-----1-----56 |
40-----17-----64-----9

[47/T] 131616# 27-----46-----3-----54
| 37 20 61 12
34 28 23 45 58 4 15 53
| 32 38--41--19--8--62--49--11
29 33 | 44 24 5 57 | 52 16 |
| 35 31 22 42 59 7 14 50
40--30--|17--43--64--6--9 51 |
26 36 47 21 2 60 55 13
39 | 18 63 | 10 |
25-----48-----1-----56

[48/T] 282087# 56-----25-----48-----1
| 9 40 17 64
11 55 38 26 19 47 62 2
| 54 10--27--39--46--18--3--63
50 12 | 31 37 42 20 7 61 |
| 15 53 34 28 23 45 58 4
13--49--|36--32--21--41--60 8 |
52 16 29 33 44 24 5 57
14 | 35 22 59 |
51-----30-----43-----6

[49/T] 45514# 10-----39-----18-----63
| 56 25 48 1
53 9 28 40 45 17 4 64
| 11 55--38--26--19--47--62--2
16 54 | 33 27 24 46 57 3 |
| 50 12 31 37 42 20 7 61
51--15--|30--34--43--23--6 58 |
13 49 36 32 21 41 60 8
52 | 29 44 5 |
14-----35-----22-----59

[50/T] 276927# 55-----26-----47-----2
| 10 39 18 63
12 56 37 25 20 48 61 1
| 53 9--28--40--45--17--4--64
49 11 | 32 38 41 19 8 62 |
| 16 54 33 27 24 46 57 3
14--50--|35--31--22--42--59 7 |
51 15 30 34 43 23 6 58
13 | 36 21 60 |
52-----29-----44-----5

[51/T] 40594# 9-----40-----17-----64
| 55 26 47 2
54 10 27 39 46 18 3 63
| 12 56--37--25--20--48--61--1
15 53 | 34 28 23 45 58 4 |
| 49 11 32 38 41 19 8 62
52--16--|29--33--44--24--5 57 |
14 50 35 31 22 42 59 7
51 | 30 43 6 |
13-----36-----21-----60

[52/T] 60778# 13-----36-----21-----60
| 52 29 44 5
56 14 25 35 48 22 1 59
| 9 51--40--30--17--43--64--6
11 55 | 38 26 19 47 62 2 |
| 54 10 27 39 46 18 3 63
50--12--|31--37--42--20--7 61 |
15 53 34 28 23 45 58 4
49 | 32 41 8 |
16-----33-----24-----57

[53/T] 256743# 51-----30-----43-----6
| 13 36 21 60
10 52 39 29 18 44 63 5
| 56 14--25--35--48--22--1--59
53 9 | 28 40 45 17 4 64 |
| 11 55 38 26 19 47 62 2
16--54--|33--27--24--46--57 3 |
50 12 31 37 42 20 7 61
15 | 34 23 58 |
49-----32-----41-----8

[54/T] 65938# 14-----35-----22-----59
| 51 30 43 6
55 13 26 36 47 21 2 60
| 10 52--39--29--18--44--63--5
12 56 | 37 25 20 48 61 1 |
| 53 9 28 40 45 17 4 64
49--11--|32--38--41--19--8 62 |
16 54 33 27 24 46 57 3
50 | 31 42 7 |
15-----34-----23-----58

[55/T] 261663# 52-----29-----44-----5
| 14 35 22 59
9 51 40 30 17 43 64 6
| 55 13--26--36--47--21--2--60
54 10 | 27 39 46 18 3 63 |
| 12 56 37 25 20 48 61 1
15--53--|34--28--23--45--58 4 |
49 11 32 38 41 19 8 62
16 | 33 24 57 |
50-----31-----42-----7

[56/T] 251553# 50-----31-----42-----7
| 15 34 23 58
13 49 36 32 21 41 60 8
| 52 16--29--33--44--24--5--57
56 14 | 25 35 48 22 1 59 |
| 9 51 40 30 17 43 64 6
11--55--|38--26--19--47--62 2 |
54 10 27 39 46 18 3 63
12 | 37 20 61 |
53-----28-----45-----4

[57/T] 76048# 16-----33-----24-----57
| 50 31 42 7
51 15 30 34 43 23 6 58
| 13 49--36--32--21--41--60--8
10 52 | 39 29 18 44 63 5 |
| 56 14 25 35 48 22 1 59
53--9--|28--40--45--17--4 64 |
11 55 38 26 19 47 62 2
54 | 27 46 3 |
12-----37-----20-----61

[58/T] 246393# 49-----32-----41-----8
| 16 33 24 57
14 50 35 31 22 42 59 7
| 51 15--30--34--43--23--6--58
55 13 | 26 36 47 21 2 60 |
| 10 52 39 29 18 44 63 5
12--56--|37--25--20--48--61 1 |
53 9 28 40 45 17 4 64
11 | 38 19 62 |
54-----27-----46-----3

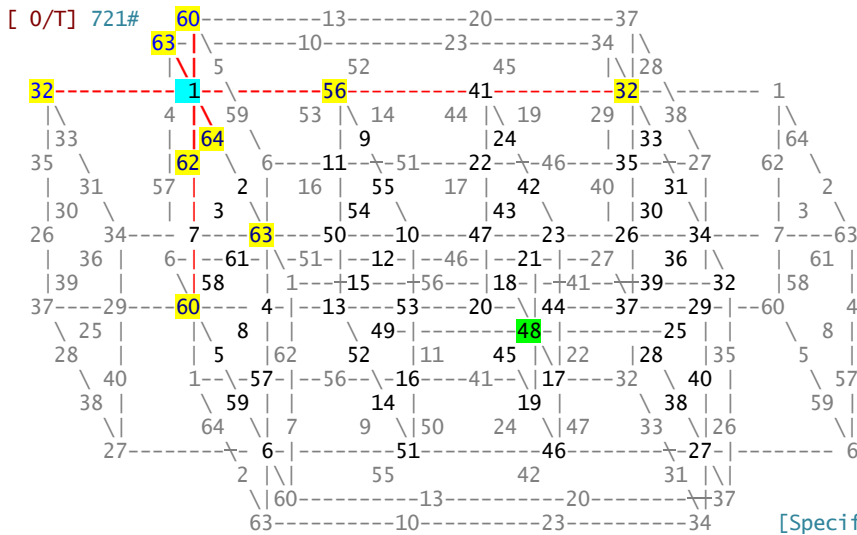
[59/T] 71128# 15-----34-----23-----58
| 49 32 41 8
52 16 29 33 44 24 5 57
| 14 50--35--31--22--42--59--7
9 51 | 40 30 17 43 64 6 |
| 55 13 26 36 47 21 2 60
54--10--|27--39--46--18--3 63 |
12 56 37 25 20 48 61 1
53 | 28 45 4 |
11-----38-----19-----62

[60/T] 50704# 11-----38-----19-----62
| 54 27 46 3
50 12 31 37 42 20 7 61
| 15 53--34--28--23--45--58--4
13 49 | 36 32 21 41 60 8 |
| 52 16 29 33 44 24 5 57
56--14--|25--35--48--22--1 59 |
9 51 40 30 17 43 64 6
55 | 26 47 2 |
10-----39-----18-----63

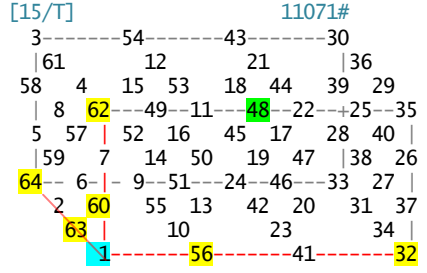
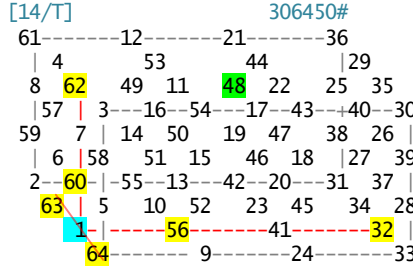
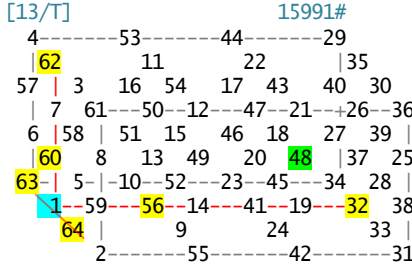
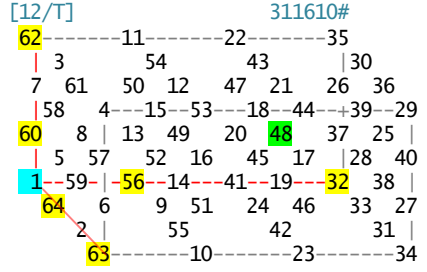
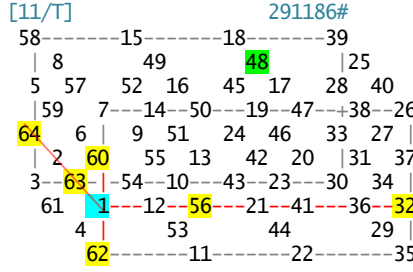
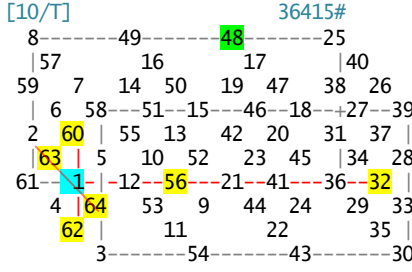
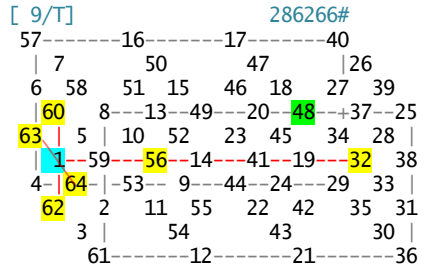
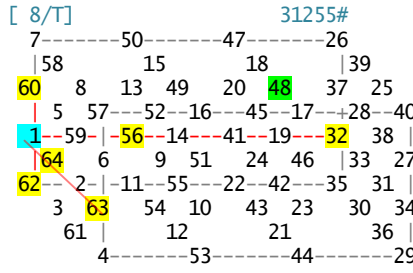
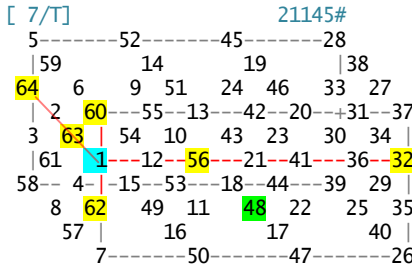
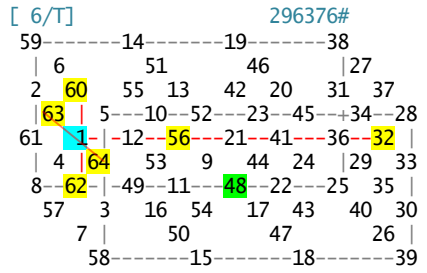
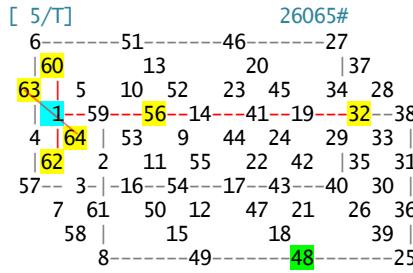
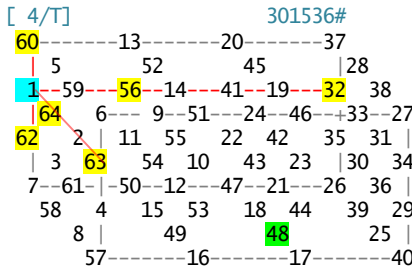
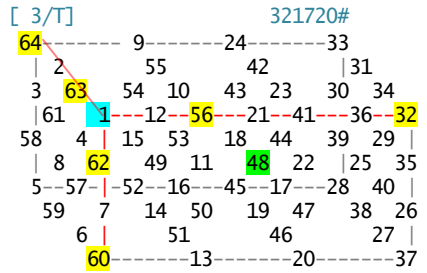
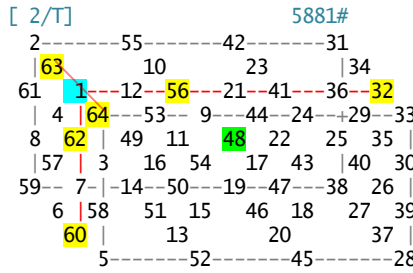
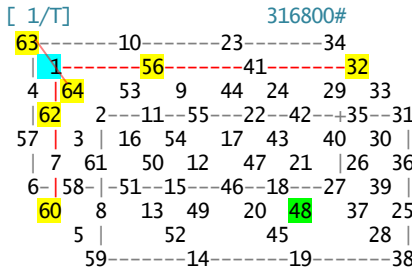
[61/T] 266817# 53-----28-----45-----4
| 11 38 19 62
16 54 33 27 24 46 57 3
| 50 12--31--37--42--20--7--61
51 15 | 30 34 43 23 6 58 |
| 13 49 36 32 21 41 60 8
10--52--|39--29--18--44--63 5 |
56 14 25 35 48 22 1 59
9 | 40 17 64 |
55-----26-----47-----2

[62/T] 55864# 12-----37-----20-----61
| 53 28 45 4
49 11 32 38 41 19 8 62
| 16 54--33--27--24--46--57--3
14 50 | 35 31 22 42 59 7 |
| 51 15 30 34 43 23 6 58
55--13--|26--36--47--21--2 60 |
10 52 39 29 18 44 63 5
56 | 25 48 1 |
9-----40-----17-----64

[63/T] 271737# 54-----27-----46-----3
| 12 37 20 61
15 53 34 28 23 45 58 4
| 49 11--32--38--41--19--8--62
52 16 | 29 33 44 24 5 57 |
| 14 50 35 31 22 42 59 7
9--51--|40--30--17--43--64 6 |
55 13 26 36 47 21 2 60
10 | 39 18 63 |
56-----25-----48-----1



[Specified old Solution Number#↓]



[16/T] 161128#
 32 1 56 41
 |33 64 9 24
 35 31 62 2 11 55 22 42
 |30 34 3 63 54 10 43 23
 26 36 | 7 61 50 12 47 21 |
 |39 29 | 58 4 15 53 | 18 44
 37 25 | 60 8 13 49 20 48
 28 40 | 5 57 52 16 45 17
 38 | 59 14 19
 27 6 51 46

[17/T] 166473#
 34 63 10 23
 |32 64 53 9 44 24
 29 33 4 64 53 9 44 24
 |35 31 62 2 11 55 22 42
 40 30 | 57 3 16 54 17 43 |
 |26 36 | 7 61 50 12 47 21 |
 27 39 | 6 58 51 15 46 18 |
 37 25 | 60 8 13 49 20 48
 28 | 5 52 45
 38 59 14 19

[18/T] 155968#
 31 2 55 42
 |34 63 10 23
 36 32 61 1 12 56 21 41
 |29 33 4 64 53 9 44 24
 25 35 | 8 62 49 11 48 22 |
 |40 30 57 3 16 54 17 43
 38 26 | 59 7 14 50 19 47 |
 27 39 | 6 58 51 15 46 18
 37 | 60 13 20
 28 5 52 46

[19/T] 161553#
 33 64 9 24
 |31 2 55 42
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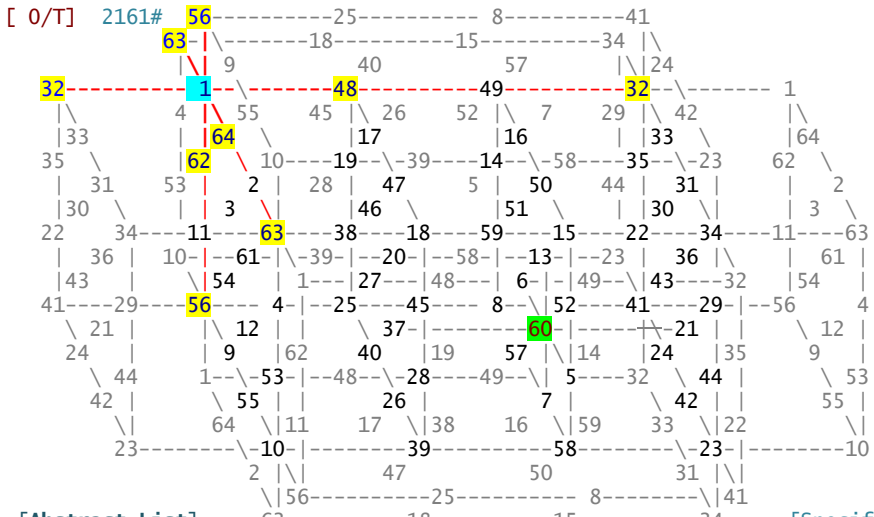
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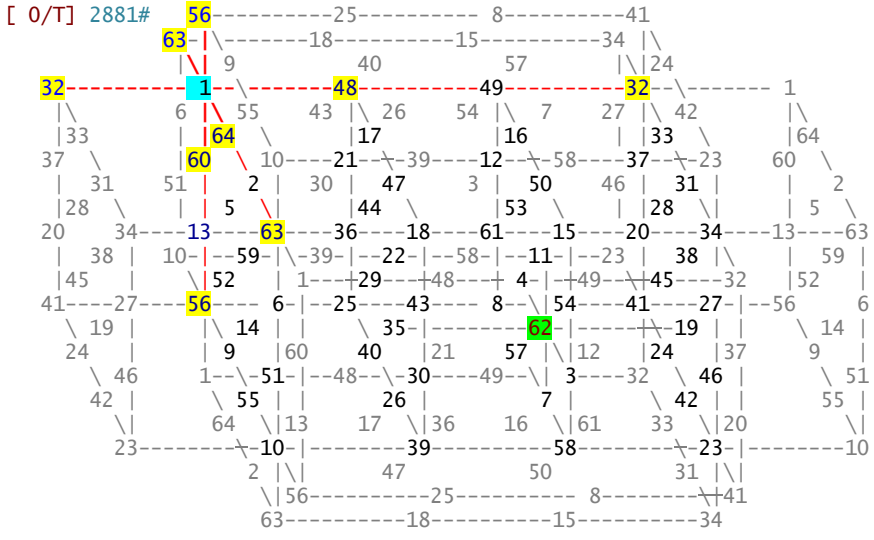
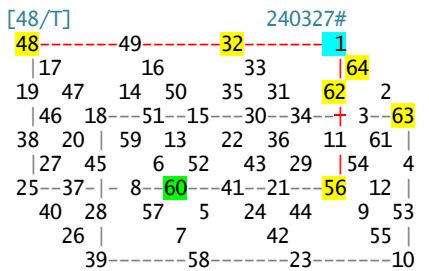
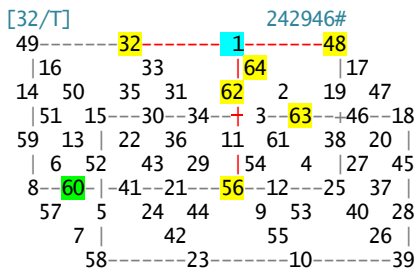
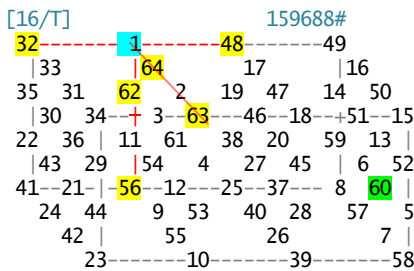
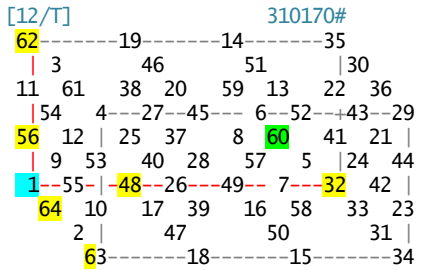
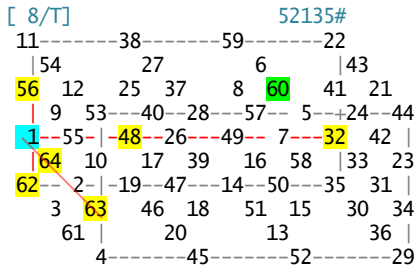
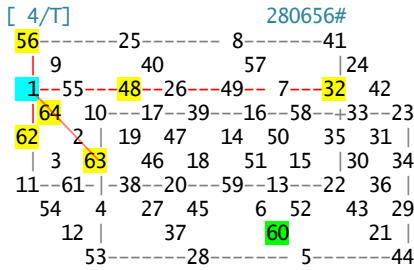
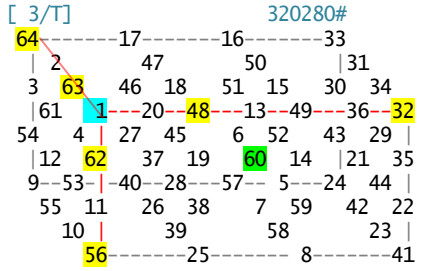
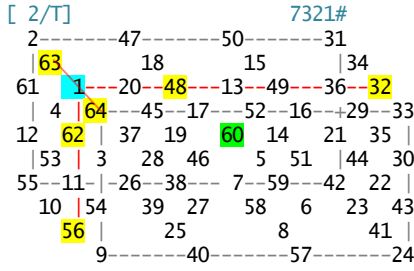
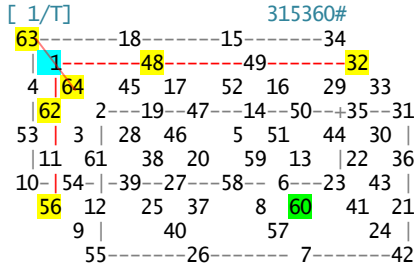
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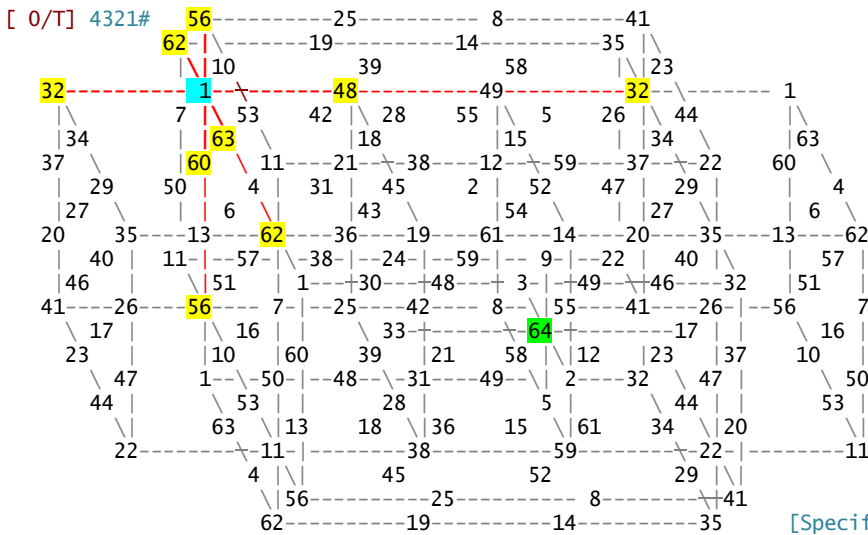
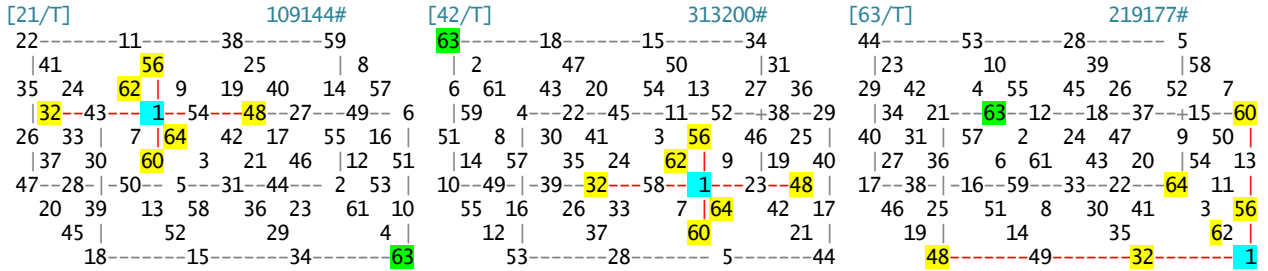
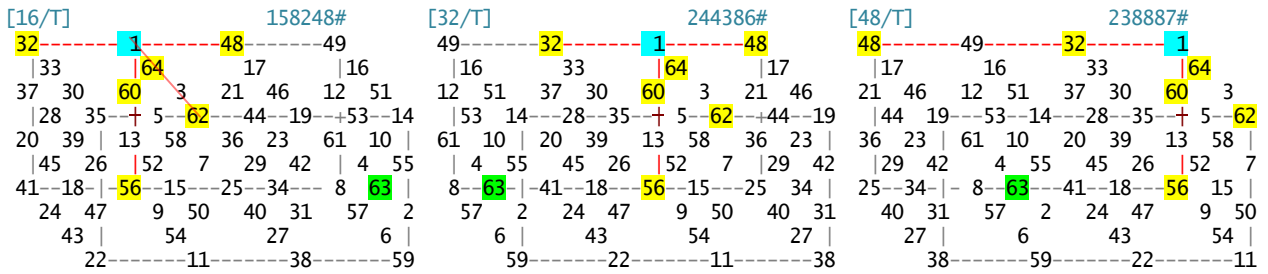
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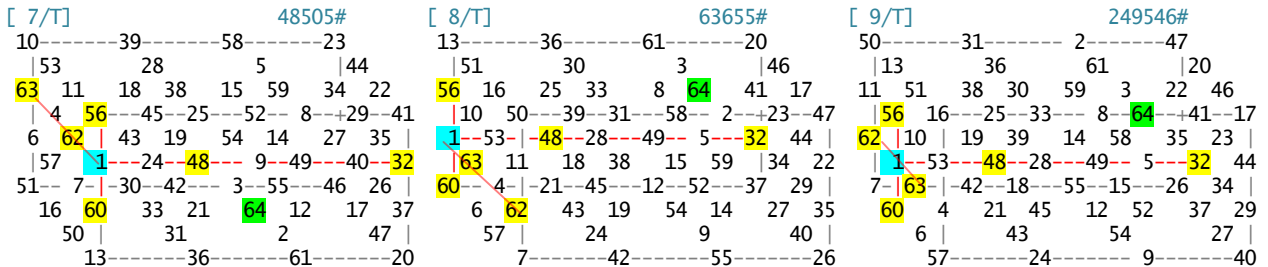
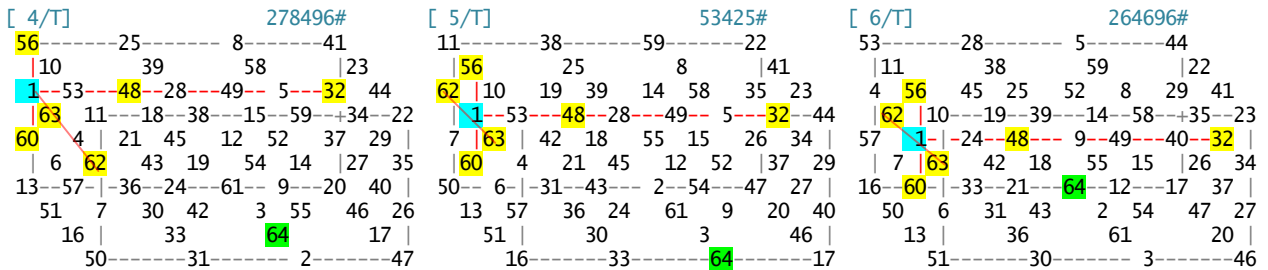
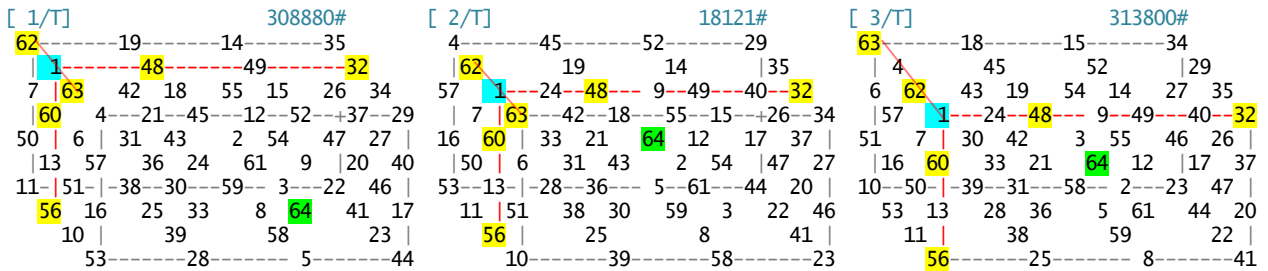
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 |60 21 12 37 |

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[25/T] 233727#
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[26/T] 84394#
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[27/T] 228807#
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[28/T] 184623#
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[29/T] 128578#
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[30/T] 198423#
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[31/T] 133498#
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[32/T] 245106#
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[33/T] 68095#
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[34/T] 258906#
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[35/T] 73015#
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[36/T] 37711#
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[37/T] 294210#
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[38/T] 23911#
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[39/T] 289290#
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[40/T] 304440#
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[41/T] 8761#
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[42/T] 318240#
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[43/T] 13681#
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[44/T] 57865#
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[45/T] 274056#
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[46/T] 44065#
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[47/T] 269136#
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[48/T] 238167#
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[49/T] 93754#
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[50/T] 224367#
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[51/T] 88834#
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(Originally Written by Kanji Setsuda in 2002, 2007

Revised by K.S. on January 8, 2015 with MacOSX 10.10.1 & Xcode 6.1.1)

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