第４章：　魔方陣の基礎的研究（上級）：摂田 寛二
第２節：　正方連結汎立体四方陣の代数的研究: Part 4

０．正方連結汎立体四方陣について，その後の研究結果を追加報告したい。
　今までの記事で，正方連結汎立体四方陣の原始解の膨大な集合とその構造について，私なりの研究成果を報告をして来たが，肝心の記述を怠っていたことに後になって気が付いた。
　解集合の構成に関する大切な記述を忘れていたのである。
　正方連結汎立体四方陣の解集合の内訳を詳しく説明していなかった。
　遅ればせながら，それをここで説明しておこうと思う。

１．正方連結**完全**立体四方陣が７分の１のスケールで正方連結**汎**立体四方陣の中に含まれていることには触れたが，他の７分の６の解集合については，各型のリストを分別して具体的に示すことがなかった。これでは，片手落ちと言われても仕方が無い。
　実は，正方連結汎立体四方陣の解集合には，七種類の「下位集合」が含まれている。

** 正方連結汎立体四方陣の実例：チェック・サム・エラー・モニター付き **

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

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

                 1441/      CS|Rw,Cl,&Pl|Pantriagonals|Composite Fours
 1------64------ 5------60     |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 |62        3       58      | 7    |0 0 0 0 0|0 0 0 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  35    2  30   59  39    6  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 0 0
 | 4  32--61--33-- 8--28--+57--37 |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
18  29 | 47  36   22  25   43  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 0 0
 |45  34   20  31   41  38  |24  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 0 0
48--52-|-17--13--44--56--21   9 | |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  19  15   46  50   23  11   42  54 |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    14 |     51       10       55 | |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      49-------16-------53-------12 |0 0 0    |0            |0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

                 2161/      CS|Rw,Cl,&Pl|Pantriagonals|Composite Fours
 1------64------ 9------56     |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 |62        3       54      |11    |0 0 0 0 0|0 0 0 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  35    2  30   55  43   10  22   |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 | 4  32--61--33--12--24--+53--41 |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
18  29 | 47  36   26  21   39  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 0 0
 |45  34   20  31   37  42  |28  23 |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
48--52-|-17--13--40--60--25   5 | |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  19  15   46  50   27   7   38  58 |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    14 |     51        6       59 | |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
      49-------16-------57------- 8 |0 0 0    |0            |0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

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

                    3601/      CS|Rw,Cl,&Pl|Pantriagonals|Composite Fours
 1-------64------- 9-------56    |0 0 0 0 0|0 0 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        5       52       |13   |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
62  37     3  28    54  45    11  20  |0 0 0 0 0|0 0 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  32--58--33---15--24--+50--41 |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
19  26 | 46  39    27  18    38  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 0
  |42  35    23  30    34  43  |31  22 |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
48--55-|-17--10---40--63---25    2 | |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  21  14    44  51    29   6    36  59 |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    12 |       53          4        61 | |0 0 0 0 0|0 0 0 0 0 0 0|0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
       49--------16--------57-------- 8 |0 0 0    |0            |0 0 0 0 0 0 0 0 0 0 0 0 0

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

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

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

  . . . . .
```

[Solution Counts according to the Values of n43 when n1=1]

1:	0,	2:	0,	3:	0,	4:	0,	5:	0,	6:	0,	7:	0,	8:	0,
9:	0,	10:	0,	11:	0,	12:	0,	13:	0,	14:	0,	15:	0,	16:	0,
17:	0,	18:	0,	19:	0,	20:	0,	21:	0,	22:	0,	23:	0,	24:	0,
25:	0,	26:	0,	27:	0,	28:	0,	29:	0,	30:	0,	31:	0,	32:	720,
33:	0,	34:	0,	35:	0,	36:	0,	37:	0,	38:	0,	39:	0,	40:	0,
41:	0,	42:	0,	43:	0,	44:	0,	45:	0,	46:	0,	47:	0,	48:	720,
49:	0,	50:	0,	51:	0,	52:	0,	53:	0,	54:	0,	55:	0,	56:	720,
57:	0,	58:	0,	59:	0,	60:	720,	61:	0,	62:	720,	63:	720,	64:	720

筆頭は，46080個の原始解を含む「正方連結**完全**立体四方陣」であるが，その他に六種類の相異なる型の正方連結**汎**立体四方陣があり，どれにも46080個の原始解が含まれている。
その実例は，以前に示した上掲のリスト↑の中に，ほんの一部が表示されている。

数値１に対応する「**汎対称点**」の内容によって，７つの型に分類できるのである。
数値１から三次元的に２ずつ進んだ位置にある**汎対称点**（n1＝1の場合，n43）にどんな数値が来るかによって，32，48，56，60，62，63 そして 64 の７型に分類できるのである。
他の数値は来ない。いつも必ずこの決まった７数が来るので，分類の目印になる。
そして，64型のものを，古来特別に「**完全型**」と言う習わしになっている。

２．**汎対称点**にその７数が来る根拠は，次のような「補数ペア」の存在である。これまでに詳しく論じて来た通りだ。
特に汎対角線型上の補数ペアの構成が重要である。

```
(7)  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=CC;
     n2+n44=n4+n42=n5+n47=n7+n45=n10+n36=n12+n34=n13+n39=n15+n37=   }CC+DD=130;
  n17+n59=n19+n57=n22+n64=n24+n62=n25+n51=n27+n49=n30+n56=n32+n54=DD;
```

この条件に対して，自然数１～64が応えてよこした解答が，次の補数ペアの候補である。この指示に従って，我々は具体的に汎立体四方陣を作らなければならないのであった。

```
 CC=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),
 DD=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!

 CC=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),
 DD=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!

 CC=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),
 DD=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!

 CC=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),
 DD=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!

 CC=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),
 DD=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!

 CC=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),
 DD=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!

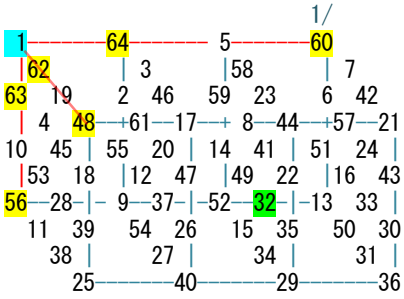
 CC=DD=65: (1,64), (2,63), (3,62), (4,61), (5,60), (6,59), (7,58), (8,57),
        (9,56), (10,55), (11,54), (12,53), (13,52), (14,51), (15,50), (16,49),
        (17,48), (18,47), (19,46), (20,45), (21,44), (22,43), (23,42), (24,41),
        (25,40), (26,39), (27,38), (28,37), (29,36), (30,35), (31,34),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

その結果，数値１に対応する**汎対称点**（三次元的に２区画ずつ進んだ位置）には 32，48，56，60，62，63 そして 64 の７数のみが来る。それゆえにこれを目印にすることによって，正方連結**汎**立体四方陣の解集合全体を７つの型の「下位集合」に分類できるのである。
特に最後の補数ペアは，和が全て 65 となる特別タイプのものだ。それによって作ったものを「正方連結**完全**立体四方陣」と呼んで，昔から特に珍重して来た（特に日本で）。

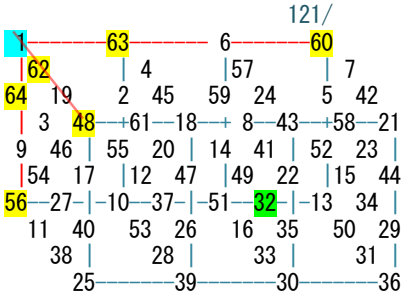
３．　正方連結汎立体四方陣の原始解のリスト（７つの型別の抜粋リスト：2015 年版）

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-32; **

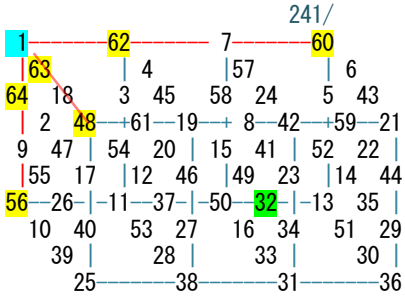
1/



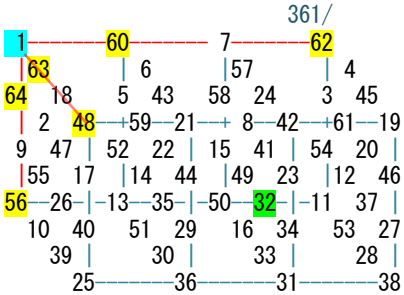
121/



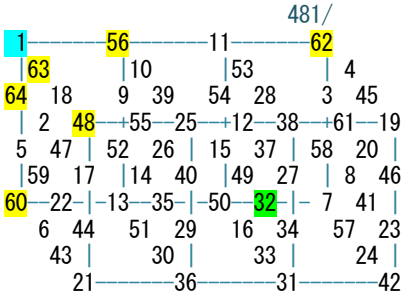
241/



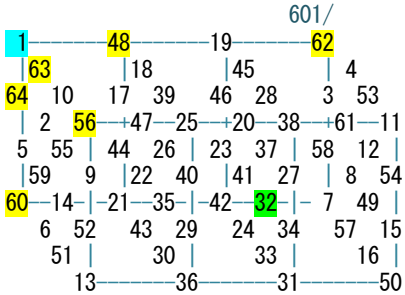
361/



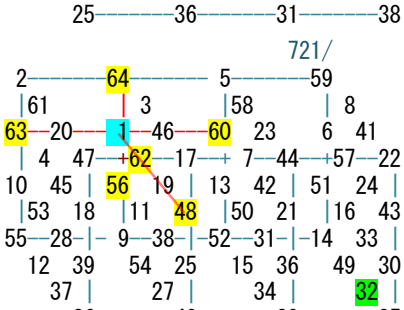
481/



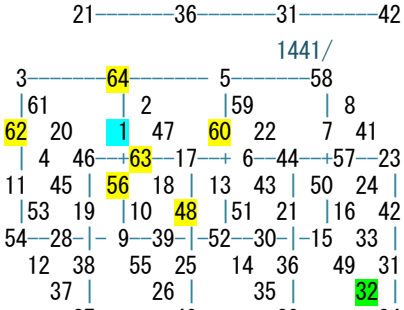
601/



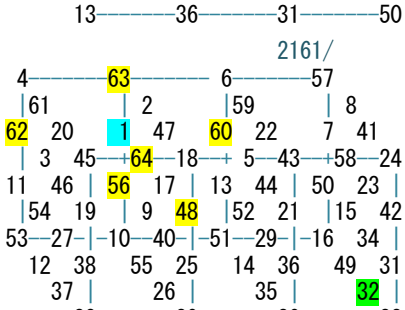
721/



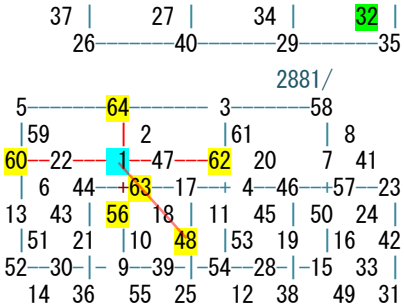
1441/



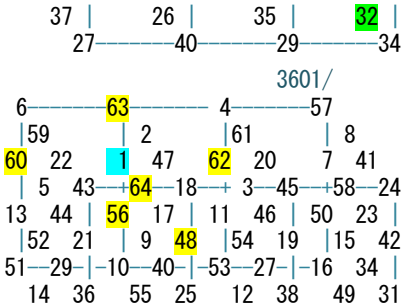
2161/



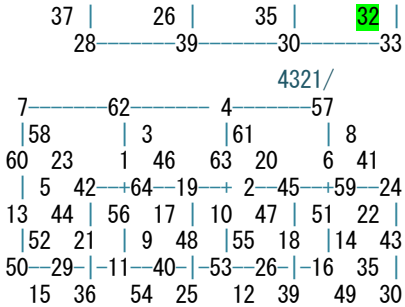
2881/



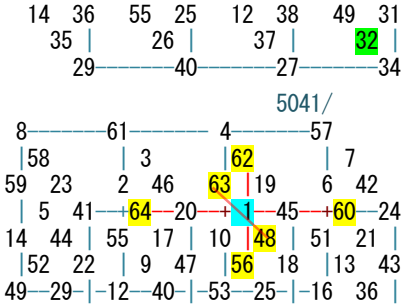
3601/



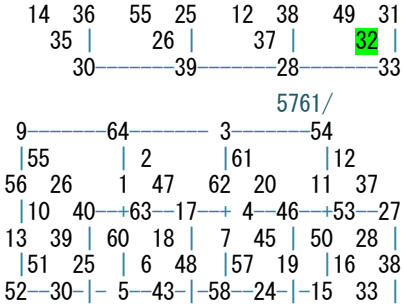
4321/



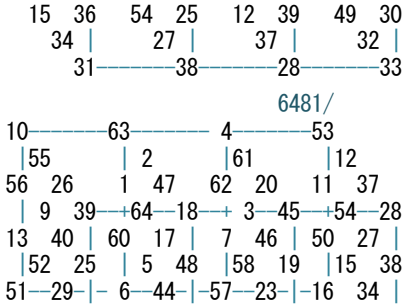
5041/



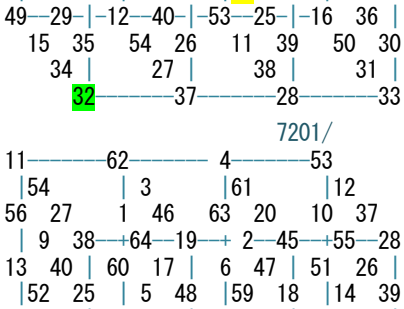
5761/



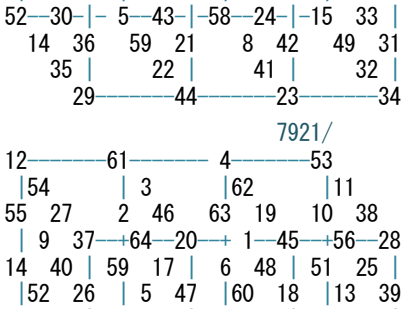
6481/



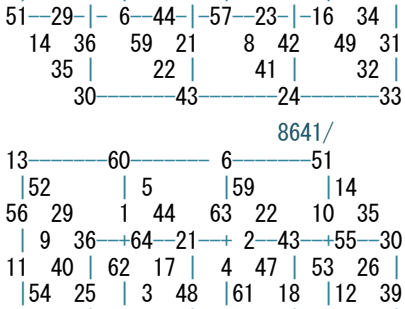
7201/

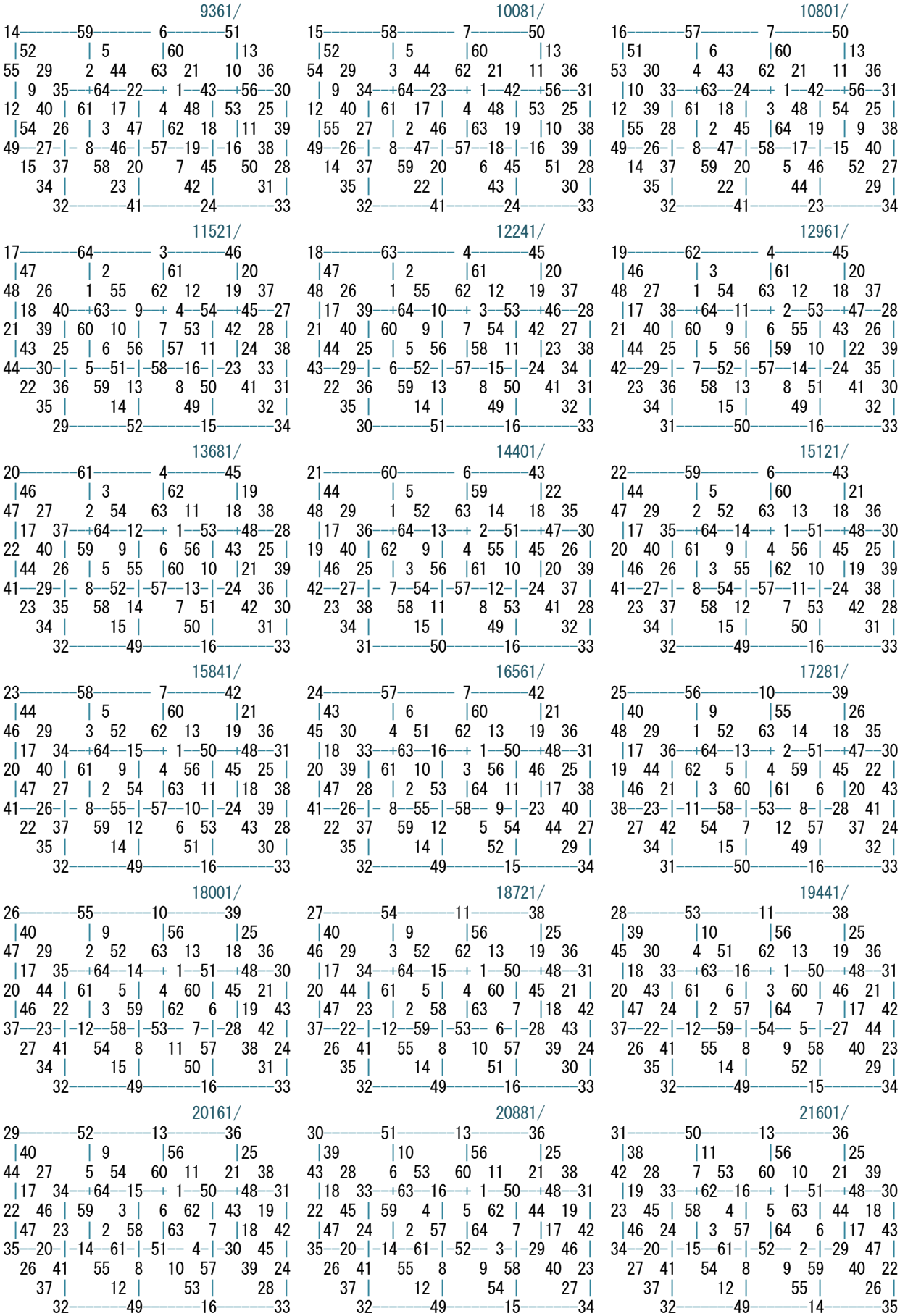


7921/



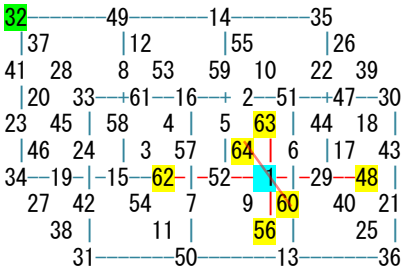
8641/



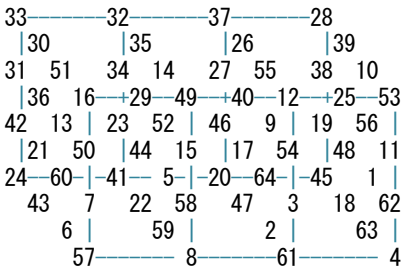


** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-32; by Kanji Setsuda **

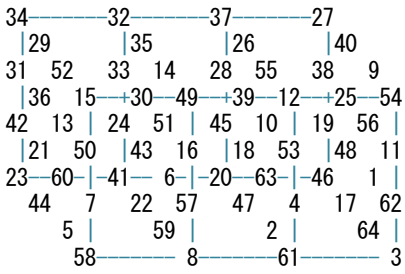
22321/



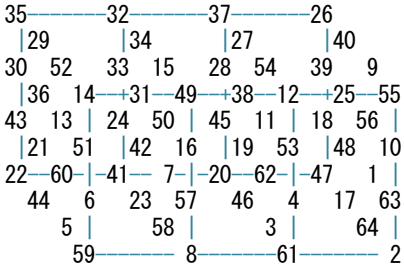
23041/



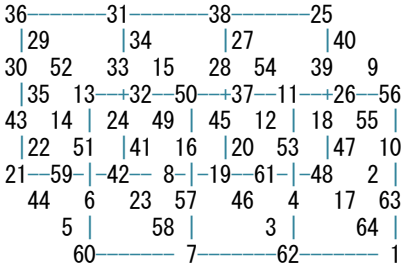
23761/



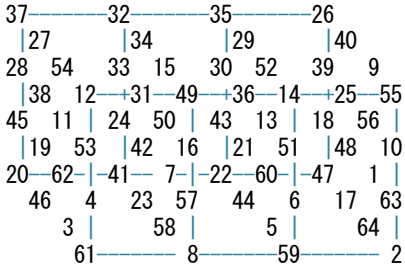
24481/



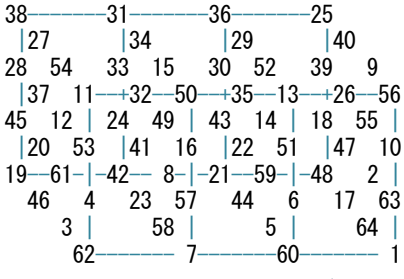
25201/



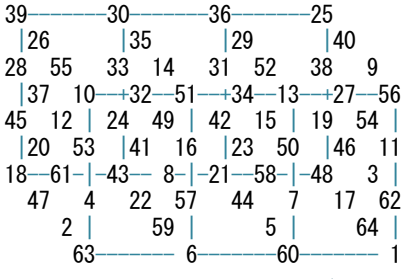
25921/



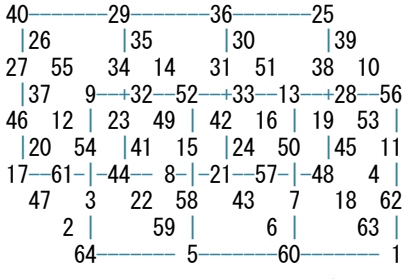
26641/



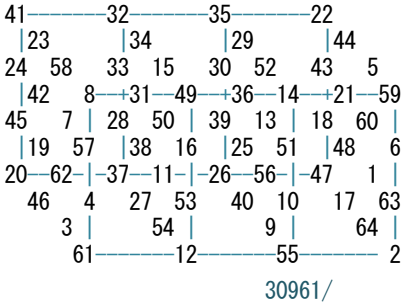
27361/



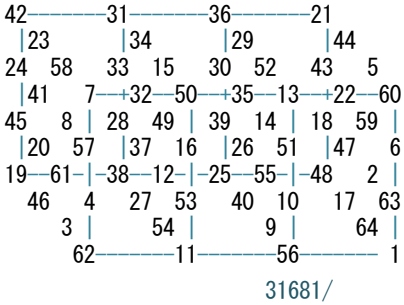
28081/



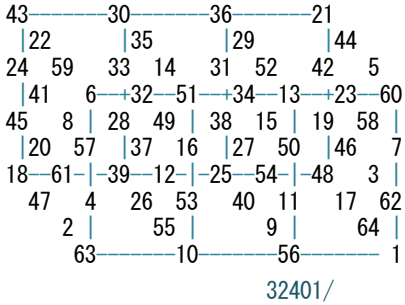
28801/



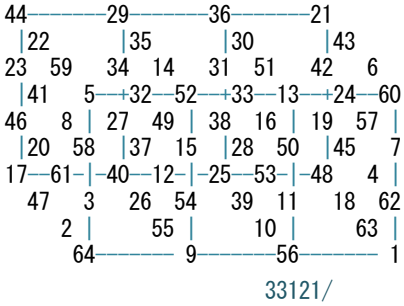
29521/



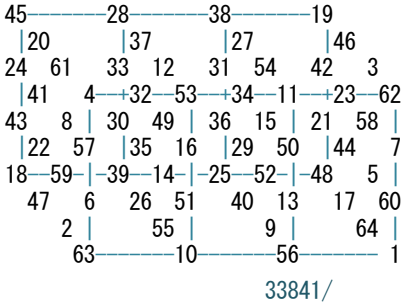
30241/



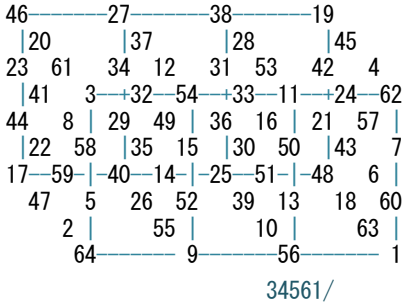
30961/



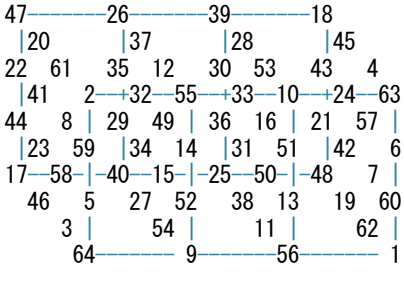
31681/



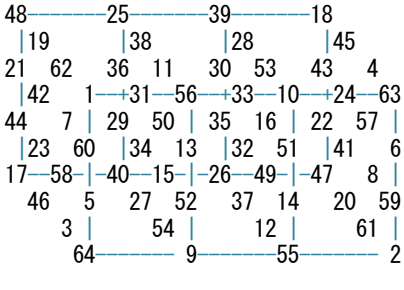
32401/



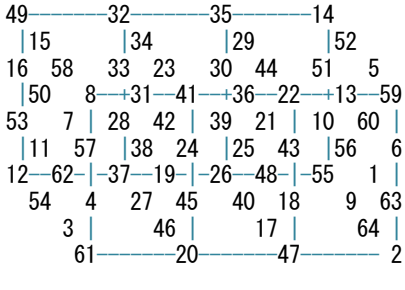
33121/



33841/



34561/



** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-32: by Kanji Setsuda **

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

                    36001/
51--------30--------36--------13
  |14        |35        |29        |52
16  59    33  22    31  44    50   5
  |49    6--+32--43--+34--21--+15--60
53    8 | 28  41 | 38  23 | 11  58 |
  |12  57  |37  24  |27  42  |54   7
10--61--|-39--20--|-25--46--|-56   3 |
  55    4   26  45   40  19     9  62
      2 |      47 |      17 |      64 |
        63--------18--------48-------- 1

                    36721/
52--------29--------36--------13
  |14        |35        |30        |51
15  59    34  22    31  43    50   6
  |49    5--+32--44--+33--21--+16--60
54    8 | 27  41 | 38  24 | 11  57 |
  |12  58  |37  23  |28  42  |53   7
 9--61--|-40--20--|-25--45--|-56   4 |
  55    3   26  46   39  19    10  62
      2 |      47 |      18 |      63 |
        64--------17--------48-------- 1

                    37441/
53--------28--------38--------11
  |12        |37        |27        |54
16  61    33  20    31  46    50   3
  |49    4--+32--45--+34--19--+15--62
51    8 | 30  41 | 36  23 | 13  58 |
  |14  57  |35  24  |29  42  |52   7
10--59--|-39--22--|-25--44--|-56   5 |
  55    6   26  43   40  21     9  60
      2 |      47 |      17 |      64 |
        63--------18--------48-------- 1

                    38161/
54--------27--------38--------11
  |12        |37        |28        |53
15  61    34  20    31  45    50   4
  |49    3--+32--46--+33--19--+16--62
52    8 | 29  41 | 36  24 | 13  57 |
  |14  58  |35  23  |30  42  |51   7
 9--59--|-40--22--|-25--43--|-56   6 |
  55    5   26  44   39  21    10  60
      2 |      47 |      18 |      63 |
        64--------17--------48-------- 1

                    38881/
55--------26--------39--------10
  |12        |37        |28        |53
14  61    35  20    30  45    51   4
  |49    2--+32--47--+33--18--+16--63
52    8 | 29  41 | 36  24 | 13  57 |
  |15  59  |34  22  |31  43  |50   6
 9--58--|-40--23--|-25--42--|-56   7 |
  54    5   27  44   38  21    11  60
      3 |      46 |      19 |      62 |
        64--------17--------48-------- 1

                    39601/
56--------25--------39--------10
  |11        |38        |28        |53
13  62    36  19    30  45    51   4
  |50    1--+31--48--+33--18--+16--63
52    7 | 29  42 | 35  24 | 14  57 |
  |15  60  |34  21  |32  43  |49   6
 9--58--|-40--23--|-26--41--|-55   8 |
  54    5   27  44   37  22    12  59
      3 |      46 |      20 |      61 |
        64--------17--------47-------- 2

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

                    41041/
58--------23--------42--------  7
  | 8        |41        |24        |57
15  61    34  20    31  45    50   4
  |49    3--+32--46--+33--19--+16--62
52   12 | 29  37 | 36  28 | 13  53 |
  |14  54  |35  27  |30  38  |51   11
 5--55--|-44--26--|-21--39--|-60   10 |
  59    9   22  40   43  25     6  56
      2 |      47 |      18 |      63 |
        64--------17--------48-------- 1

                    41761/
59--------22--------43--------  6
  | 8        |41        |24        |57
14  61    35  20    30  45    51   4
  |49    2--+32--47--+33--18--+16--63
52   12 | 29  37 | 36  28 | 13  53 |
  |15  55  |34  26  |31  39  |50   10
 5--54--|-44--27--|-21--38--|-60   11 |
  58    9   23  40   42  25     7  56
      3 |      46 |      19 |      62 |
        64--------17--------48-------- 1

                    42481/
60--------21--------43--------  6
  | 7        |42        |24        |57
13  62    36  19    30  45    51   4
  |50    1--+31--48--+33--18--+16--63
52   11 | 29  38 | 35  28 | 14  53 |
  |15  56  |34  25  |32  39  |49   10
 5--54--|-44--27--|-22--37--|-59   12 |
  58    9   23  40   41  26     8  55
      3 |      46 |      20 |      61 |
        64--------17--------47-------- 2

                    43201/
61--------20--------45--------  4
  | 8        |41        |24        |57
12  59    37  22    28  43    53   6
  |49    2--+32--47--+33--18--+16--63
54   14 | 27  35 | 38  30 | 11  51 |
  |15  55  |34  26  |31  39  |50   10
 3--52--|-46--29--|-19--36--|-62   13 |
  58    9   23  40   42  25     7  56
      5 |      44 |      21 |      60 |
        64--------17--------48-------- 1

                    43921/
62--------19--------45--------  4
  | 7        |42        |24        |57
11  60    38  21    28  43    53   6
  |50    1--+31--48--+33--18--+16--63
54   13 | 27  36 | 37  30 | 12  51 |
  |15  56  |34  25  |32  39  |49   10
 3--52--|-46--29--|-20--35--|-61   14 |
  58    9   23  40   41  26     8  55
      5 |      44 |      22 |      59 |
        64--------17--------47-------- 2

                    44641/
63--------18--------45--------  4
  | 6        |43        |24        |57
10  60    39  21    28  42    53   7
  |51    1--+30--48--+33--19--+16--62
55   13 | 26  36 | 37  31 | 12  50 |
  |14  56  |35  25  |32  38  |49   11
 2--52--|-47--29--|-20--34--|-61   15 |
  59    9   22  40   41  27     8  54
      5 |      44 |      23 |      58 |
        64--------17--------46-------- 3

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

[Solution Counts(when n1=1/All) = 720/46080]

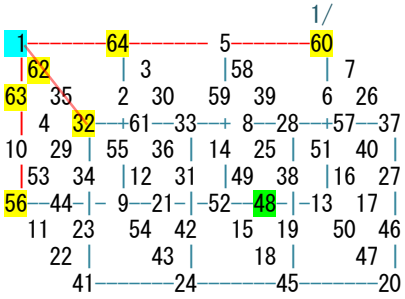
[Solution Counts according to the Positions of Value 1]

1:	720,	2:	720,	3:	720,	4:	720,	5:	720,	6:	720,	7:	720,	8:	720,
9:	720,	10:	720,	11:	720,	12:	720,	13:	720,	14:	720,	15:	720,	16:	720,
17:	720,	18:	720,	19:	720,	20:	720,	21:	720,	22:	720,	23:	720,	24:	720,
25:	720,	26:	720,	27:	720,	28:	720,	29:	720,	30:	720,	31:	720,	32:	720,
33:	720,	34:	720,	35:	720,	36:	720,	37:	720,	38:	720,	39:	720,	40:	720,
41:	720,	42:	720,	43:	720,	44:	720,	45:	720,	46:	720,	47:	720,	48:	720,
49:	720,	50:	720,	51:	720,	52:	720,	53:	720,	54:	720,	55:	720,	56:	720,
57:	720,	58:	720,	59:	720,	60:	720,	61:	720,	62:	720,	63:	720,	64:	720

OK!

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-48; **

1/



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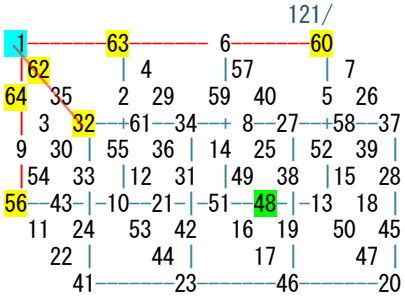

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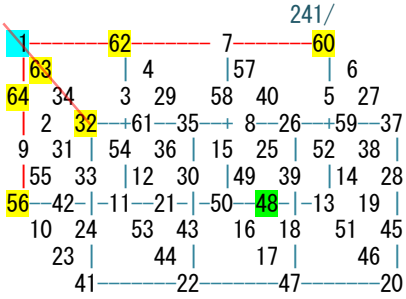

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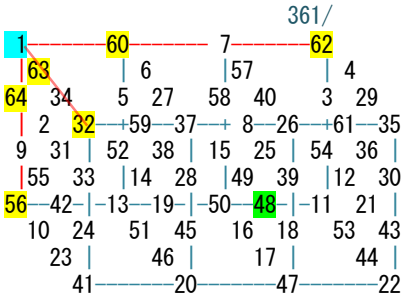

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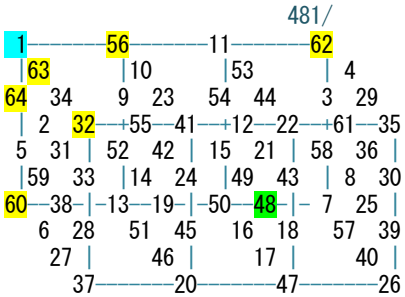

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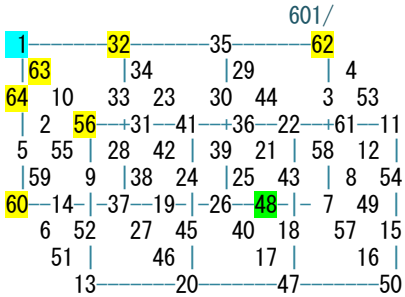

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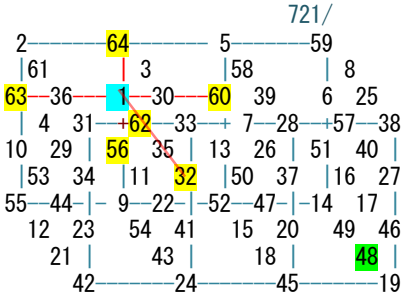

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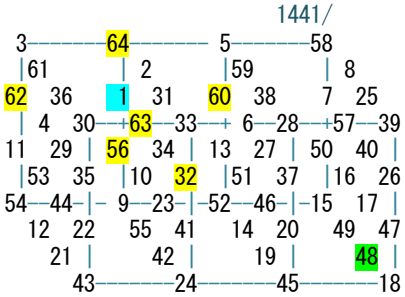

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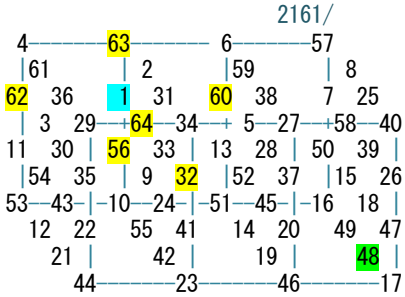

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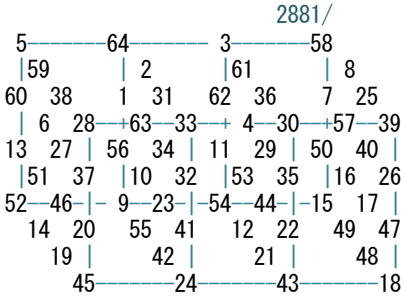

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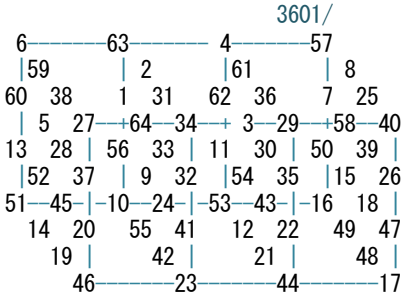

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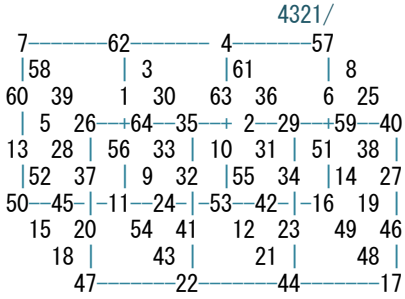

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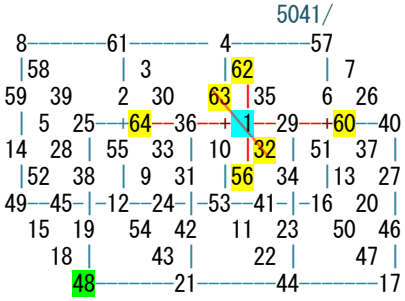

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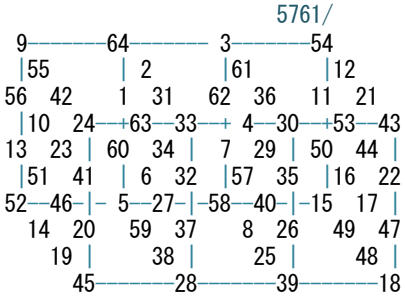

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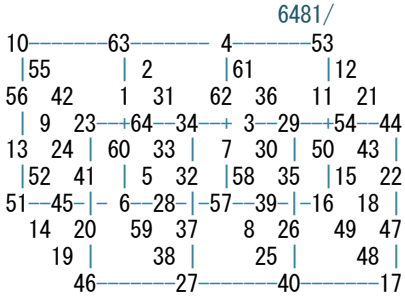

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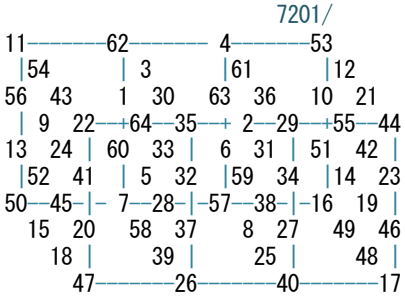

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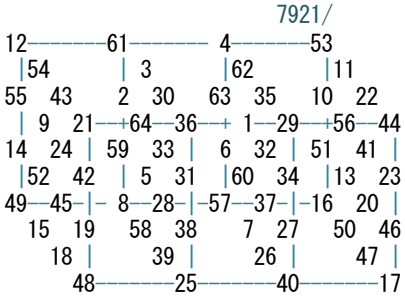

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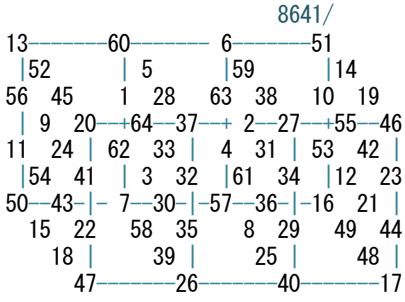

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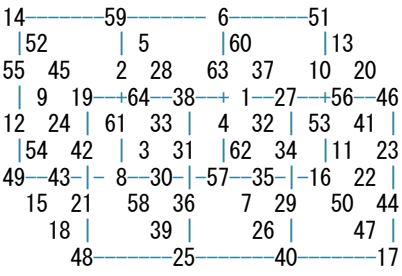

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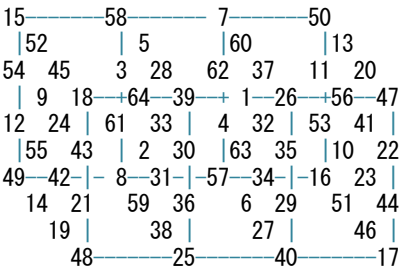

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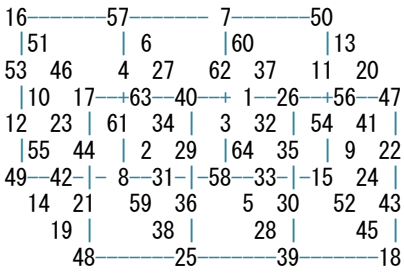

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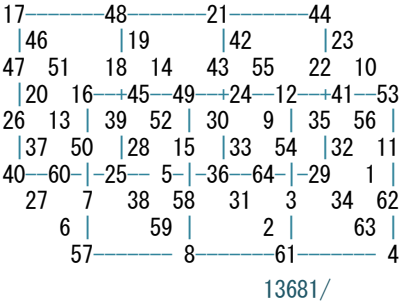

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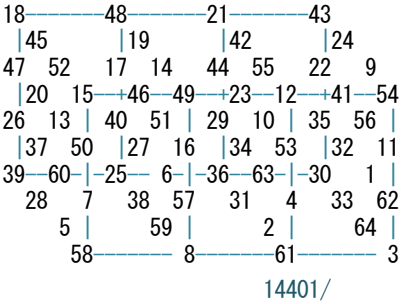

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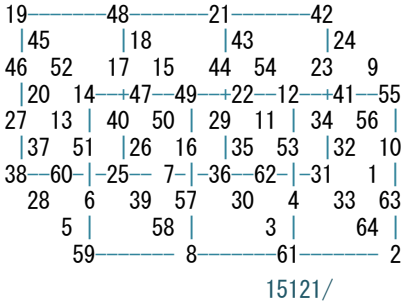

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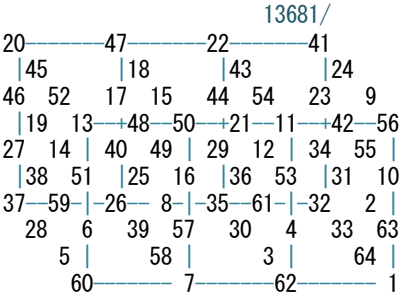

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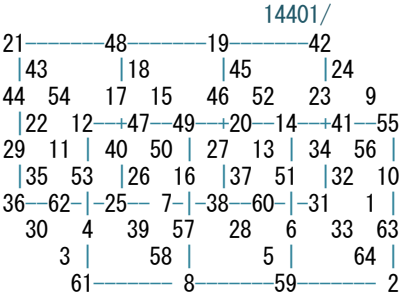

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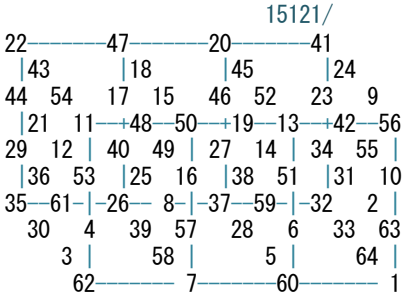

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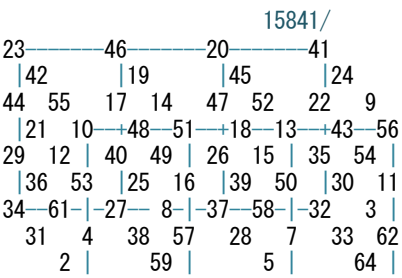

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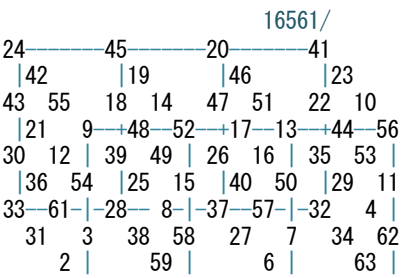

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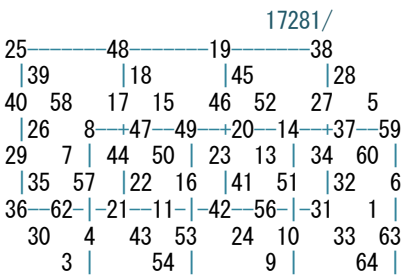

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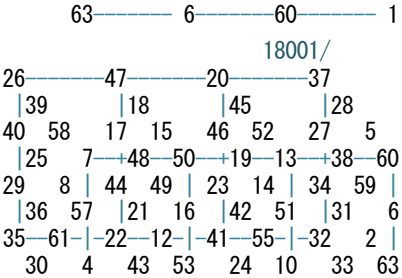

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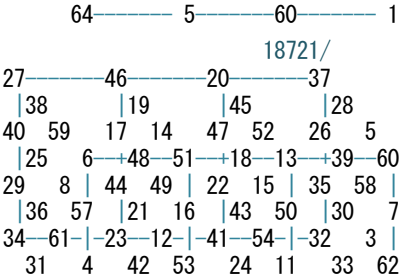

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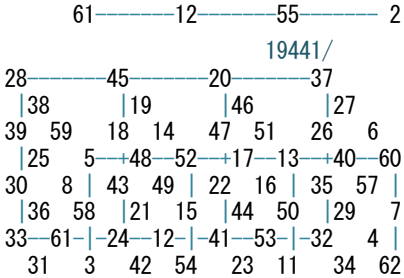

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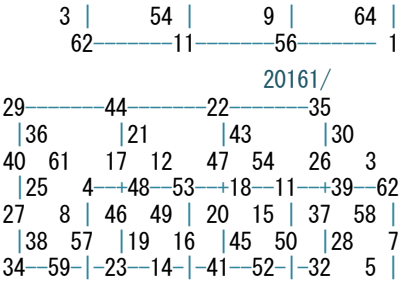

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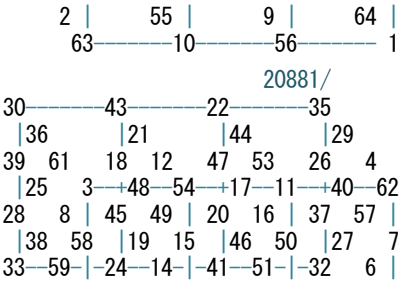

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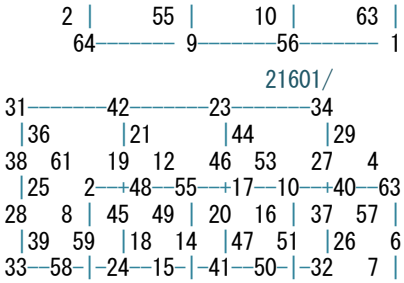

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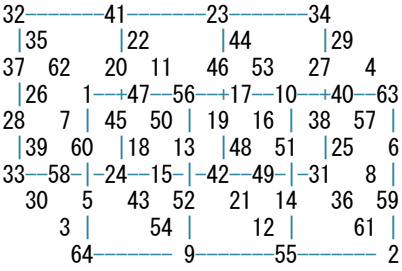

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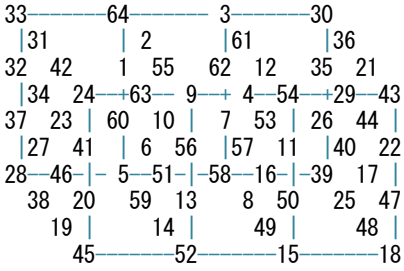

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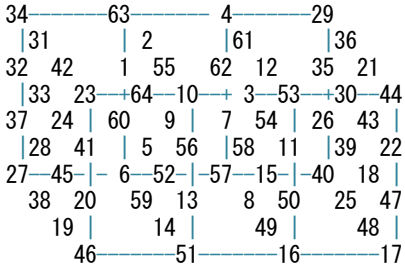

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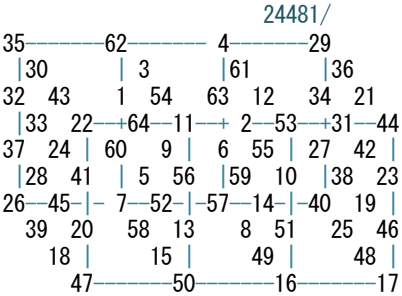

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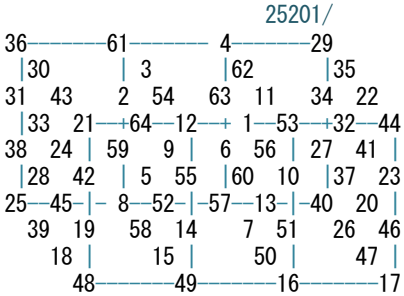

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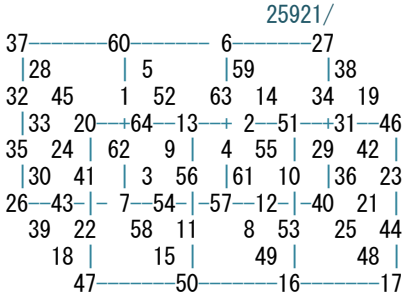

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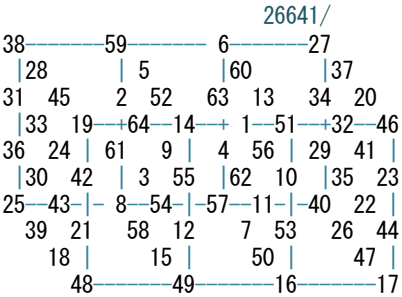

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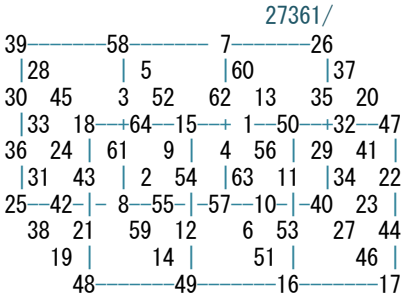

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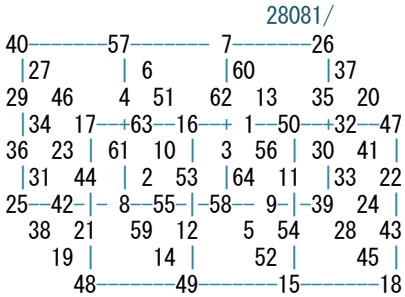

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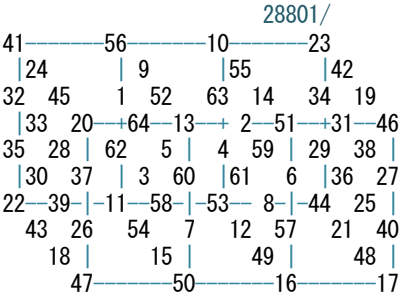

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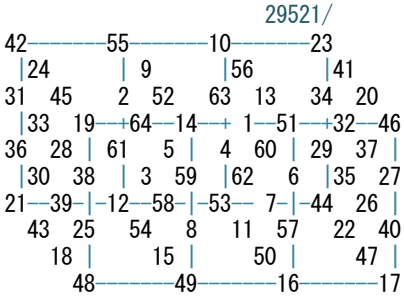

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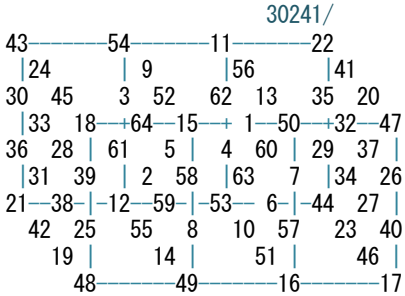

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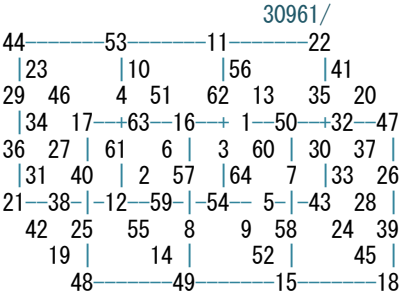

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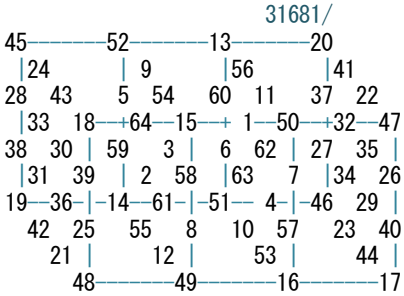

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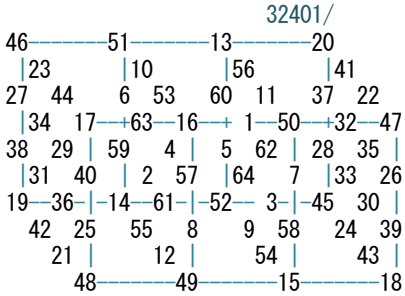

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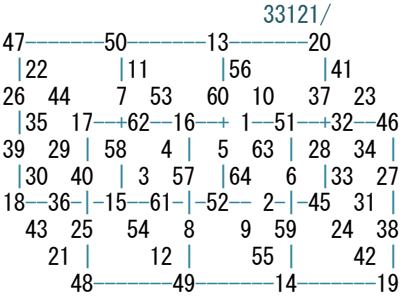
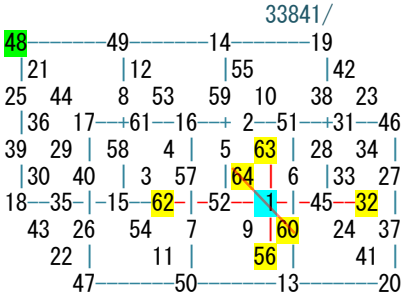


33841/



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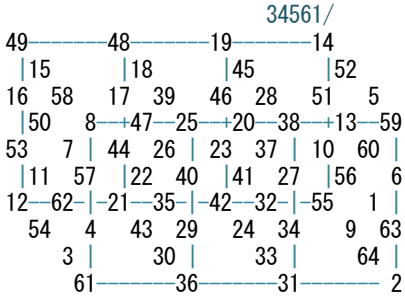


** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-48: by Kanji Setsuda **

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

                    36001/
51--------46--------20--------13
  |14        |19        |45        |52
16  59    17  38    47  28    50   5
  |49    6--+48--27--+18--37--+15--60
53   8 | 44  25 | 22  39 | 11  58 |
  |12  57  |21  40  |43  26  |54   7
10--61--|--23--36--|--41--30--|--56   3 |
  55    4    42  29    24  35     9  62
     2 |        31 |        33 |        64 |
       63--------34--------32--------- 1

                    36721/
52--------45--------20--------13
  |14        |19        |46        |51
15  59    18  38    47  27    50   6
  |49    5--+48--28--+17--37--+16--60
54   8 | 43  25 | 22  40 | 11  57 |
  |12  58  |21  39  |44  26  |53   7
 9--61--|--24--36--|--41--29--|--56   4 |
  55    3    42  30    23  35    10  62
     2 |        31 |        34 |        63 |
       64--------33--------32--------- 1

                    37441/
53--------44--------22--------11
  |12        |21        |43        |54
16  61    17  36    47  30    50   3
  |49    4--+48--29--+18--35--+15--62
51   8 | 46  25 | 20  39 | 13  58 |
  |14  57  |19  40  |45  26  |52   7
10--59--|--23--38--|--41--28--|--56   5 |
  55    6    42  27    24  37     9  60
     2 |        31 |        33 |        64 |
       63--------34--------32--------- 1

                    38161/
54--------43--------22--------11
  |12        |21        |44        |53
15  61    18  36    47  29    50   4
  |49    3--+48--30--+17--35--+16--62
52   8 | 45  25 | 20  40 | 13  57 |
  |14  58  |19  39  |46  26  |51   7
 9--59--|--24--38--|--41--27--|--56   6 |
  55    5    42  28    23  37    10  60
     2 |        31 |        34 |        63 |
       64--------33--------32--------- 1

                    38881/
55--------42--------23--------10
  |12        |21        |44        |53
14  61    19  36    46  29    51   4
  |49    2--+48--31--+17--34--+16--63
52   8 | 45  25 | 20  40 | 13  57 |
  |15  59  |18  38  |47  27  |50   6
 9--58--|--24--39--|--41--26--|--56   7 |
  54    5    43  28    22  37    11  60
     3 |        30 |        35 |        62 |
       64--------33--------32--------- 1

                    39601/
56--------41--------23--------10
  |11        |22        |44        |53
13  62    20  35    46  29    51   4
  |50    1--+47--32--+17--34--+16--63
52   7 | 45  26 | 19  40 | 14  57 |
  |15  60  |18  37  |48  27  |49   6
 9--58--|--24--39--|--42--25--|--55   8 |
  54    5    43  28    21  38    12  59
     3 |        30 |        36 |        61 |
       64--------33--------31--------- 2

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

                    41041/
58--------39--------26--------- 7
  | 8        |25        |40        |57
15  61    18  36    47  29    50   4
  |49    3--+48--30--+17--35--+16--62
52  12 | 45  21 | 20  44 | 13  53 |
  |14  54  |19  43  |46  22  |51  11
 5--55--|--28--42--|--37--23--|--60  10 |
  59   9    38  24    27  41     6  56
     2 |        31 |        34 |        63 |
       64--------33--------32--------- 1

                    41761/
59--------38--------27--------- 6
  | 8        |25        |40        |57
14  61    19  36    46  29    51   4
  |49    2--+48--31--+17--34--+16--63
52  12 | 45  21 | 20  44 | 13  53 |
  |15  55  |18  42  |47  23  |50  10
 5--54--|--28--43--|--37--22--|--60  11 |
  58   9    39  24    26  41     7  56
     3 |        30 |        35 |        62 |
       64--------33--------32--------- 1

                    42481/
60--------37--------27--------- 6
  | 7        |26        |40        |57
13  62    20  35    46  29    51   4
  |50    1--+47--32--+17--34--+16--63
52  11 | 45  22 | 19  44 | 14  53 |
  |15  56  |18  41  |48  23  |49  10
 5--54--|--28--43--|--38--21--|--59  12 |
  58   9    39  24    25  42     8  55
     3 |        30 |        36 |        61 |
       64--------33--------31--------- 2

                    43201/
61--------36--------29--------- 4
  | 8        |25        |40        |57
12  59    21  38    44  27    53   6
  |49    2--+48--31--+17--34--+16--63
54  14 | 43  19 | 22  46 | 11  51 |
  |15  55  |18  42  |47  23  |50  10
 3--52--|--30--45--|--35--20--|--62  13 |
  58   9    39  24    26  41     7  56
     5 |        28 |        37 |        60 |
       64--------33--------32--------- 1

                    43921/
62--------35--------29--------- 4
  | 7        |26        |40        |57
11  60    22  37    44  27    53   6
  |50    1--+47--32--+17--34--+16--63
54  13 | 43  20 | 21  46 | 12  51 |
  |15  56  |18  41  |48  23  |49  10
 3--52--|--30--45--|--36--19--|--61  14 |
  58   9    39  24    25  42     8  55
     5 |        28 |        38 |        59 |
       64--------33--------31--------- 2

                    44641/
63--------34--------29--------- 4
  | 6        |27        |40        |57
10  60    23  37    44  26    53   7
  |51    1--+46--32--+17--35--+16--62
55  13 | 42  20 | 21  47 | 12  50 |
  |14  56  |19  41  |48  22  |49  11
 2--52--|--31--45--|--36--18--|--61  15 |
  59   9    38  24    25  43     8  54
     5 |        28 |        39 |        58 |
       64--------33--------30--------- 3

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

[Solution Counts(when n1=1/All) = 720/46080]

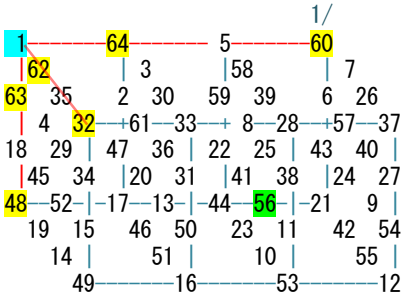
[Solution Counts according to the Positions of Value 1]

1:	720,	2:	720,	3:	720,	4:	720,	5:	720,	6:	720,	7:	720,	8:	720,
9:	720,	10:	720,	11:	720,	12:	720,	13:	720,	14:	720,	15:	720,	16:	720,
17:	720,	18:	720,	19:	720,	20:	720,	21:	720,	22:	720,	23:	720,	24:	720,
25:	720,	26:	720,	27:	720,	28:	720,	29:	720,	30:	720,	31:	720,	32:	720,
33:	720,	34:	720,	35:	720,	36:	720,	37:	720,	38:	720,	39:	720,	40:	720,
41:	720,	42:	720,	43:	720,	44:	720,	45:	720,	46:	720,	47:	720,	48:	720,
49:	720,	50:	720,	51:	720,	52:	720,	53:	720,	54:	720,	55:	720,	56:	720,
57:	720,	58:	720,	59:	720,	60:	720,	61:	720,	62:	720,	63:	720,	64:	720

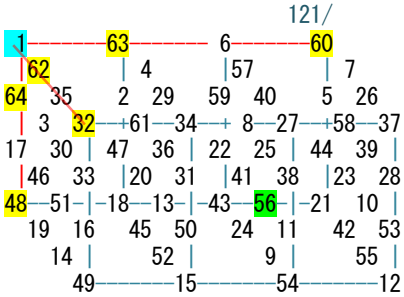
OK!

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-56; **

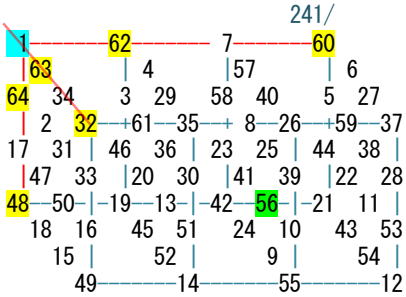
1/



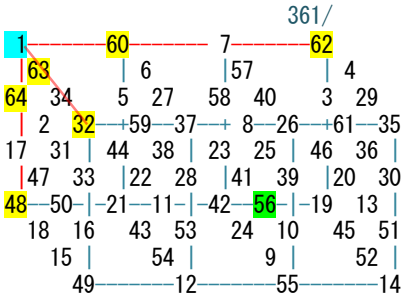
121/



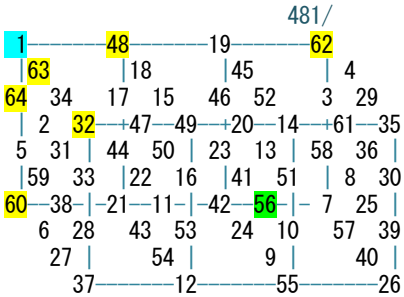
241/



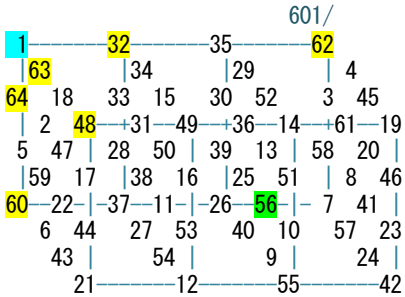
361/



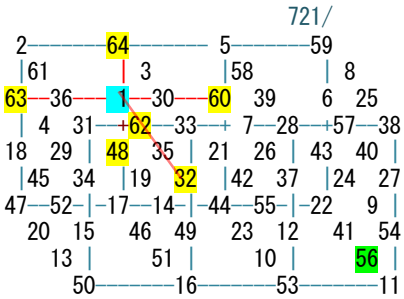
481/



601/



721/



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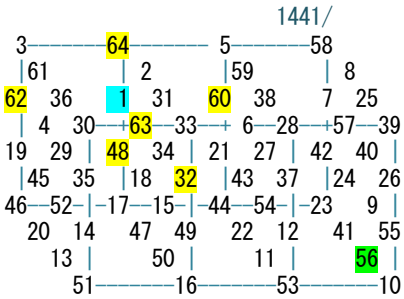

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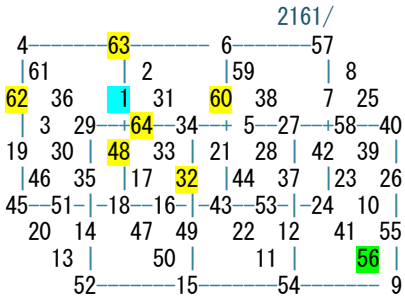

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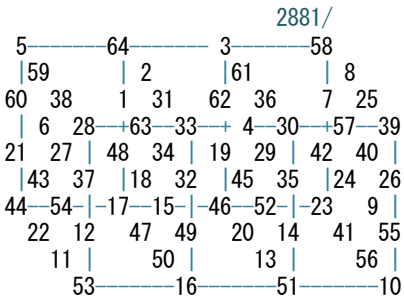
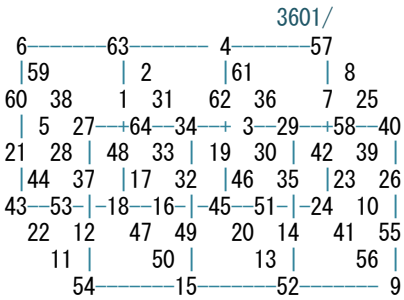
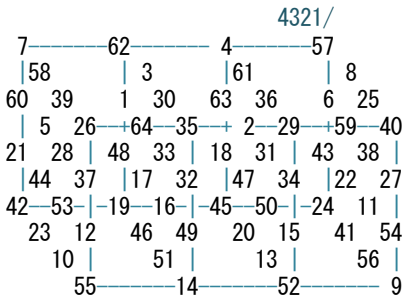


3601/



4321/



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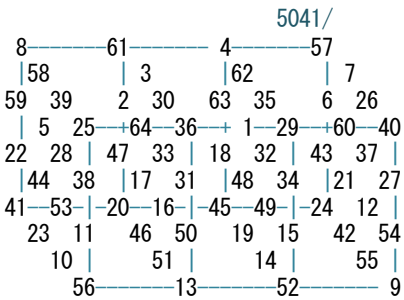

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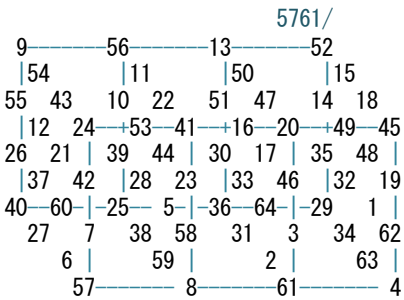

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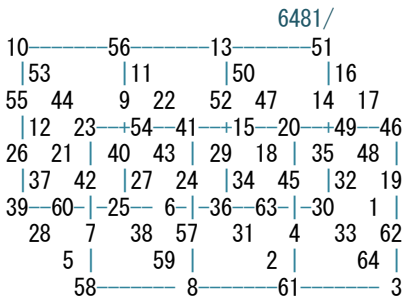

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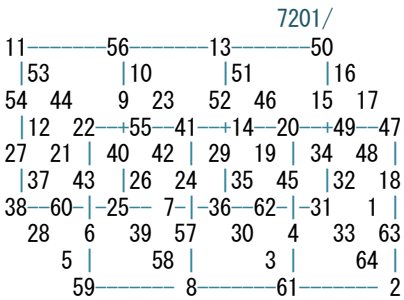
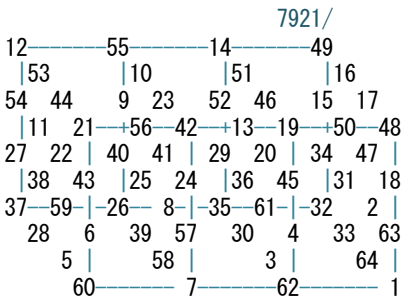


7921/



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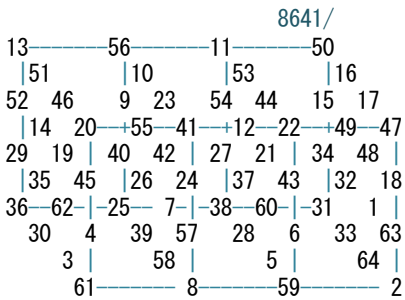
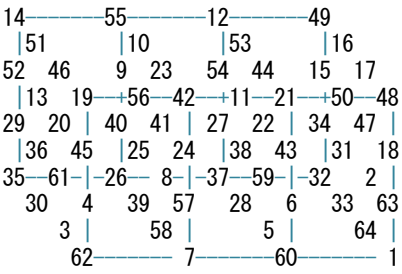


9361/



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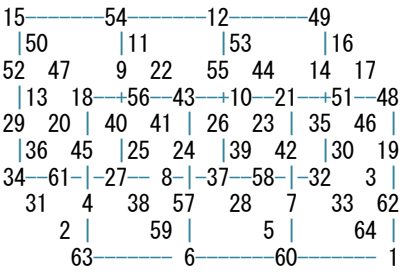

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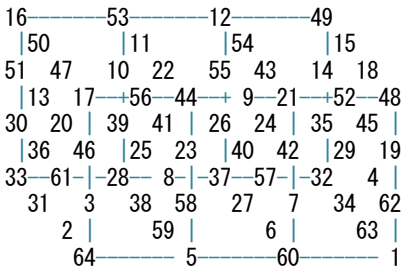
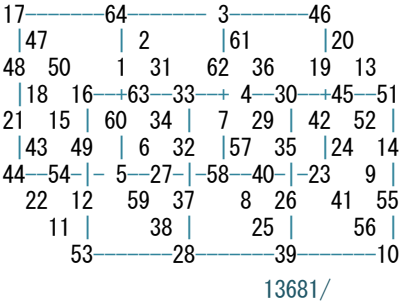
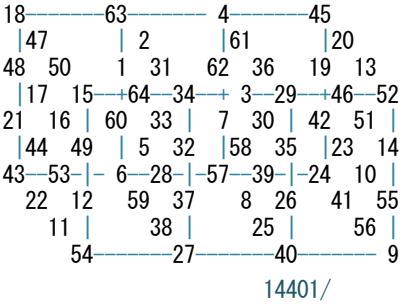


11521/



12241/



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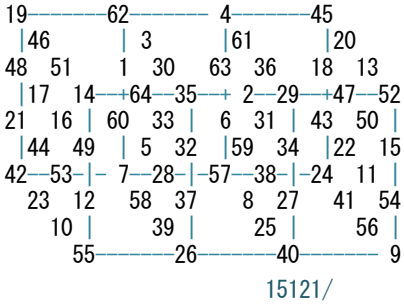

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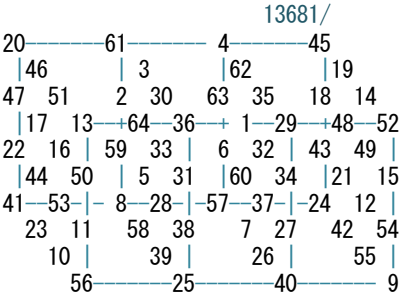

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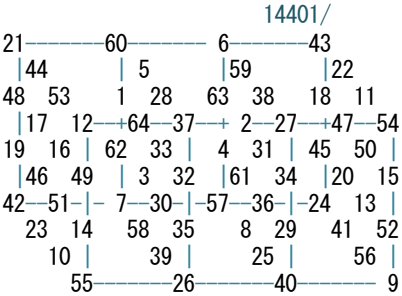

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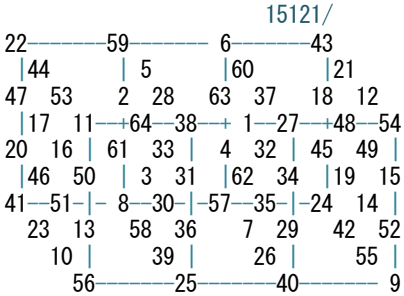

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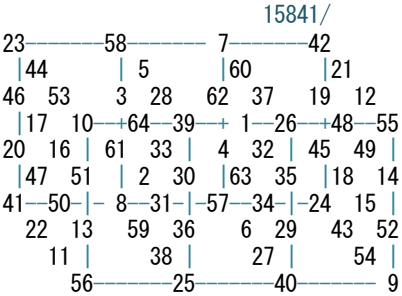
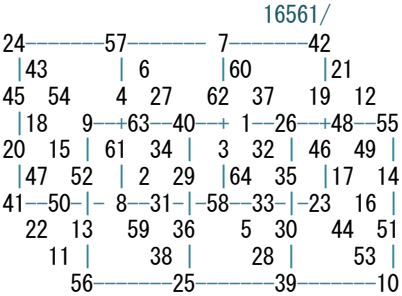
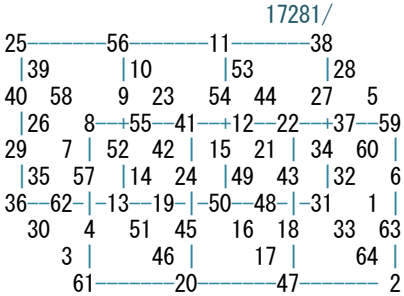


16561/



17281/



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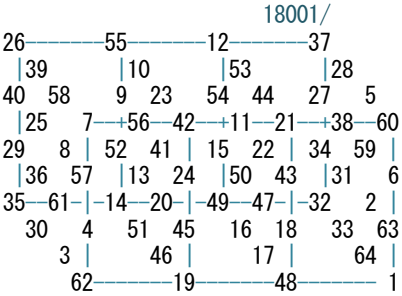

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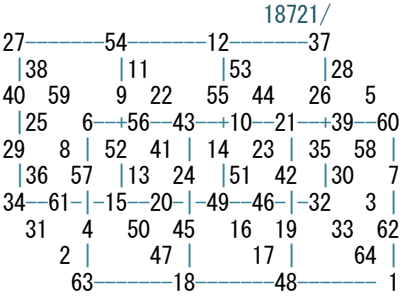

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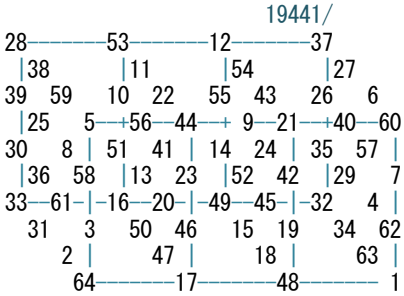

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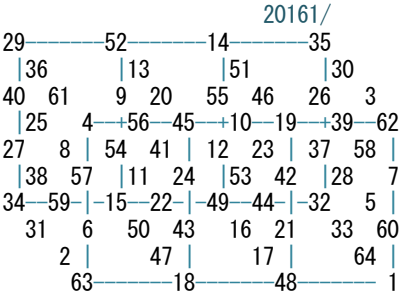

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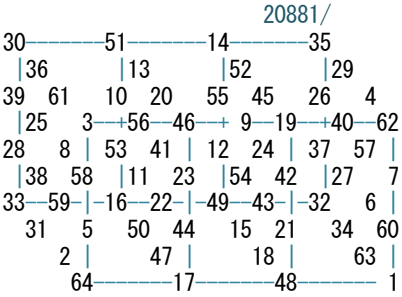

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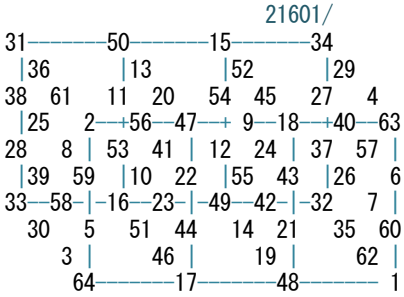

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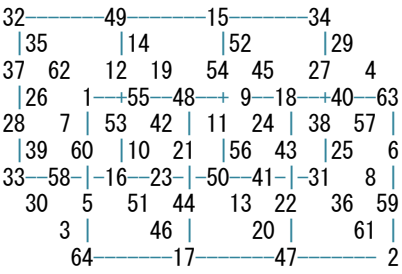

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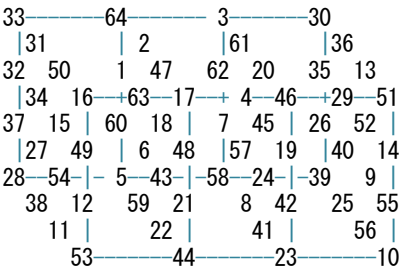

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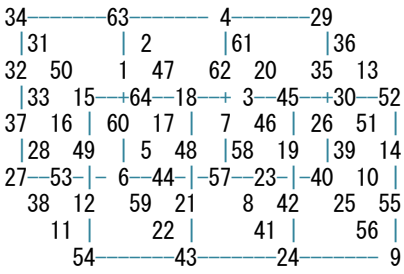

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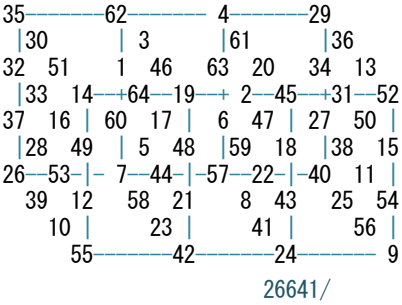

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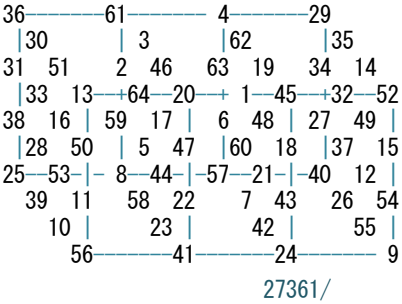

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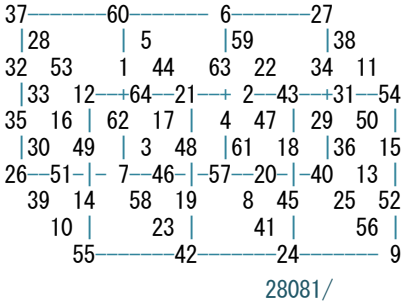

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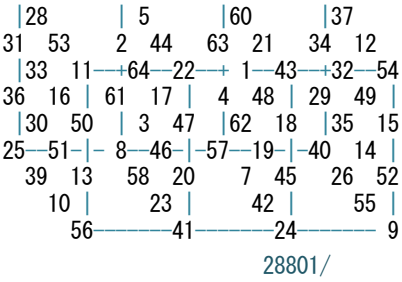

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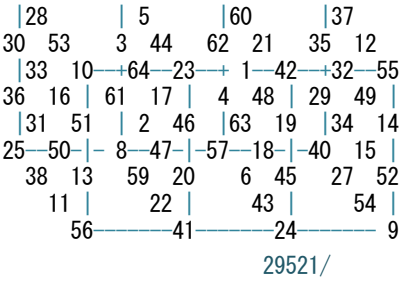

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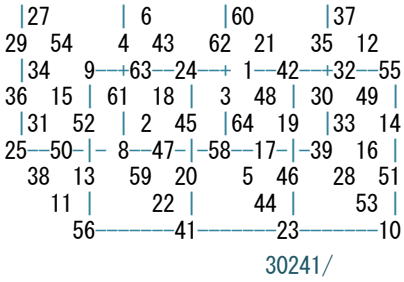

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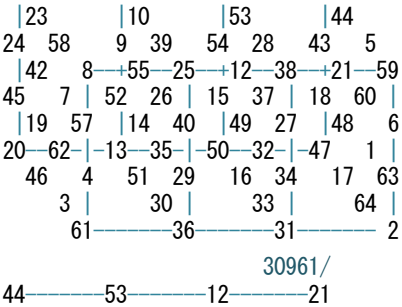

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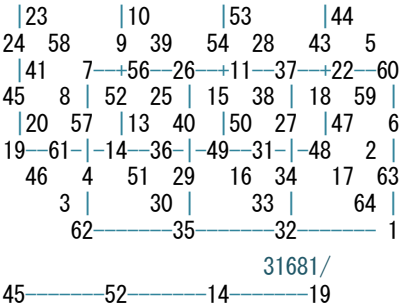

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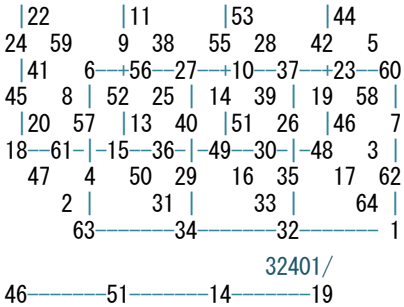

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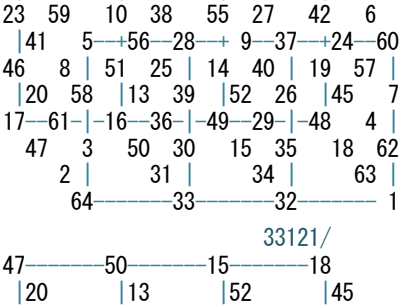

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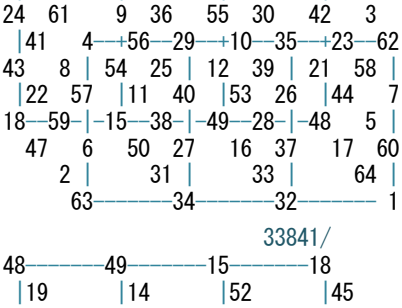

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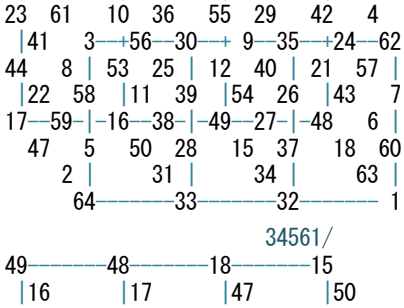

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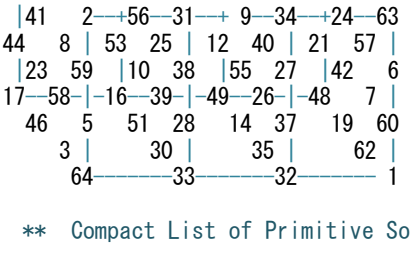

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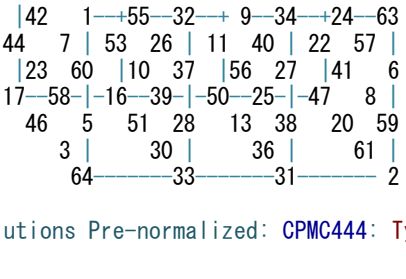

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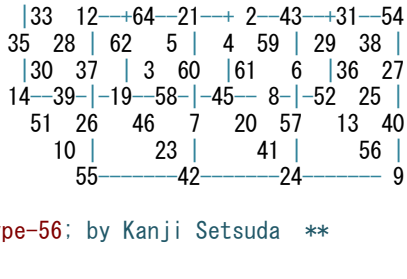

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  |33  11--+64--22--+ 1--43--+32--54
36  28 | 61   5 |  4  60 | 29  37 |
  |30  38 | 3  59 |62   6 |35  27
13--39--|-20--58--|-45-- 7-|-52  26 |
  51  25   46   8   19  57   14  40
    10 |      23 |      42 |      55 |
       56--------41--------24-------- 9

                    36001/
51--------46--------19--------14
  |16       |17       |48       |49
30  53    3  44    62  21    35  12
  |33  10--+64--23--+ 1--42--+32--55
36  28 | 61   5 |  4  60 | 29  37 |
  |31  39 | 2  58 |63   7 |34  26
13--38--|-20--59--|-45-- 6-|-52  27 |
  50  25   47   8   18  57   15  40
    11 |      22 |      43 |      54 |
       56--------41--------24-------- 9

                    36721/
52--------45--------19--------14
  |15       |18       |48       |49
29  54    4  43    62  21    35  12
  |34   9--+63--24--+ 1--42--+32--55
36  27 | 61   6 |  3  60 | 30  37 |
  |31  40 | 2  57 |64   7 |33  26
13--38--|-20--59--|-46-- 5-|-51  28 |
  50  25   47   8   17  58   16  39
    11 |      22 |      44 |      53 |
       56--------41--------23--------10

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

                    38161/
54--------43--------21--------12
  |15       |18       |48       |49
27  52    6  45    60  19    37  14
  |34   9--+63--24--+ 1--42--+32--55
38  29 | 59   4 |  5  62 | 28  35 |
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11--36--|-22--61--|-44-- 3-|-53  30 |
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    13 |      20 |      46 |      51 |
       56--------41--------23--------10

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

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

                    41041/
58--------39--------26-------- 7
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23  61    10  36    55  29    42   4
  |41   3--+56--30--+ 9--35--+24--62
44  20 | 53  13 | 12  52 | 21  45 |
  |22  46 |11  51 |54  14 |43  19
 5--47--|-28--50--|-37--15--|-60  18 |
  59  17   38  16   27  49    6  48
    2 |      31 |      34 |      63 |
      64--------33--------32-------- 1

                    41761/
59--------38--------27-------- 6
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22  61   11  36    54  29    43   4
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44  20 | 53  13 | 12  52 | 21  45 |
  |23  47 |10  50 |55  15 |42  18
 5--46--|-28--51--|-37--14--|-60  19 |
  58  17   39  16   26  49    7  48
    3 |      30 |      35 |      62 |
      64--------33--------32-------- 1

                    42481/
60--------37--------27-------- 6
  | 7       |26       |40       |57
21  62   12  35    54  29    43   4
  |42   1--+55--32--+ 9--34--+24--63
44  19 | 53  14 | 11  52 | 22  45 |
  |23  48 |10  49 |56  15 |41  18
 5--46--|-28--51--|-38--13--|-59  20 |
  58  17   39  16   25  50    8  47
    3 |      30 |      36 |      61 |
      64--------33--------31-------- 2

                    43201/
61--------36--------29-------- 4
  | 8       |25       |40       |57
20  59   13  38    52  27    45   6
  |41   2--+56--31--+ 9--34--+24--63
46  22 | 51  11 | 14  54 | 19  43 |
  |23  47 |10  50 |55  15 |42  18
 3--44--|-30--53--|-35--12--|-62  21 |
  58  17   39  16   26  49    7  48
    5 |      28 |      37 |      60 |
      64--------33--------32-------- 1

                    43921/
62--------35--------29-------- 4
  | 7       |26       |40       |57
19  60   14  37    52  27    45   6
  |42   1--+55--32--+ 9--34--+24--63
46  21 | 51  12 | 13  54 | 20  43 |
  |23  48 |10  49 |56  15 |41  18
 3--44--|-30--53--|-36--11--|-61  22 |
  58  17   39  16   25  50    8  47
    5 |      28 |      38 |      59 |
      64--------33--------31-------- 2

                    44641/
63--------34--------29-------- 4
  | 6       |27       |40       |57
18  60   15  37    52  26    45   7
  |43   1--+54--32--+ 9--35--+24--62
47  21 | 50  12 | 13  55 | 20  42 |
  |22  48 |11  49 |56  14 |41  19
 2--44--|-31--53--|-36--10--|-61  23 |
  59  17   38  16   25  51    8  46
    5 |      28 |      39 |      58 |
      64--------33--------30-------- 3

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

[Solution Counts(when n1=1/All) = 720/46080]

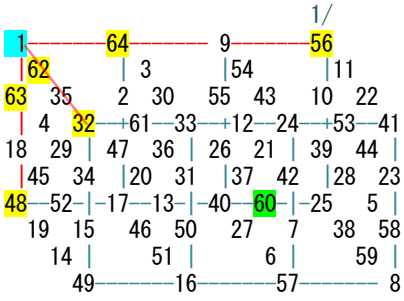
[Solution Counts according to the Positions of Value 1]

1:	720,	2:	720,	3:	720,	4:	720,	5:	720,	6:	720,	7:	720,	8:	720,
9:	720,	10:	720,	11:	720,	12:	720,	13:	720,	14:	720,	15:	720,	16:	720,
17:	720,	18:	720,	19:	720,	20:	720,	21:	720,	22:	720,	23:	720,	24:	720,
25:	720,	26:	720,	27:	720,	28:	720,	29:	720,	30:	720,	31:	720,	32:	720,
33:	720,	34:	720,	35:	720,	36:	720,	37:	720,	38:	720,	39:	720,	40:	720,
41:	720,	42:	720,	43:	720,	44:	720,	45:	720,	46:	720,	47:	720,	48:	720,
49:	720,	50:	720,	51:	720,	52:	720,	53:	720,	54:	720,	55:	720,	56:	720,
57:	720,	58:	720,	59:	720,	60:	720,	61:	720,	62:	720,	63:	720,	64:	720

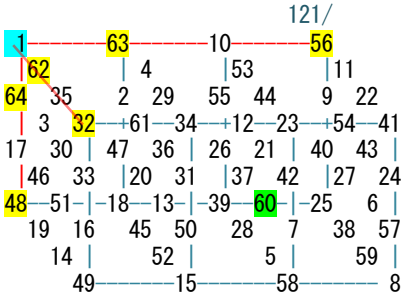
OK!

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-60; **

1/



121/



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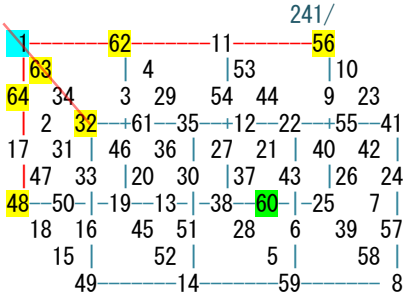

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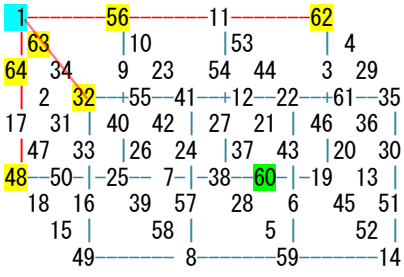

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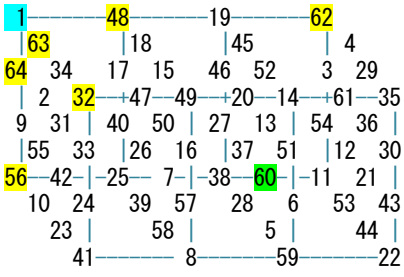

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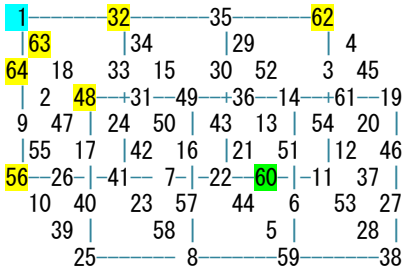

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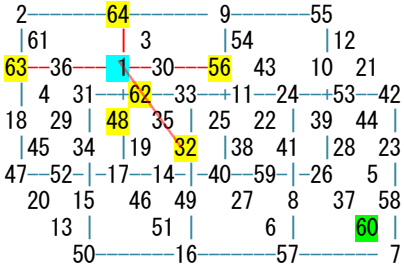

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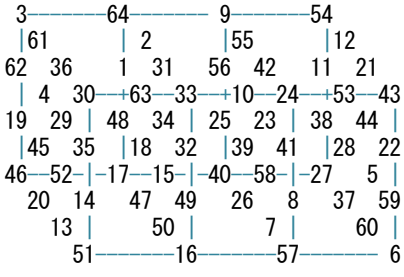

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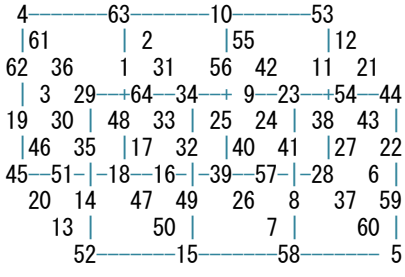

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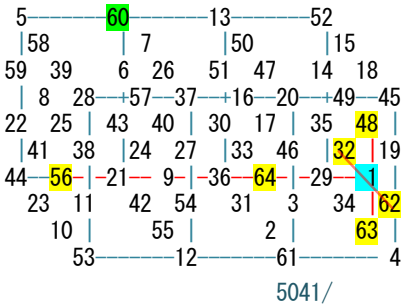

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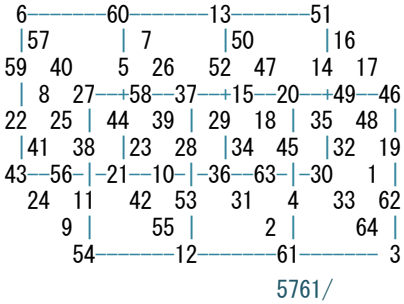
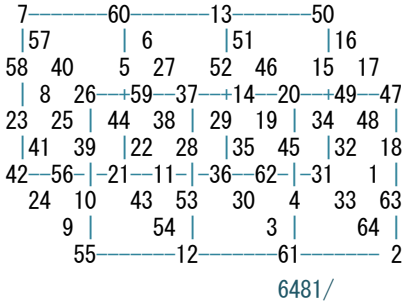


4321/



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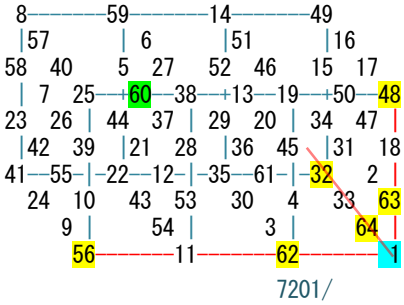

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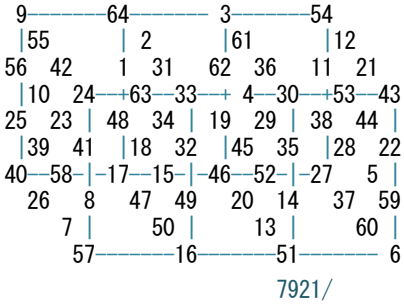

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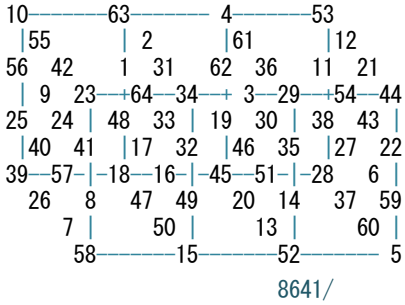

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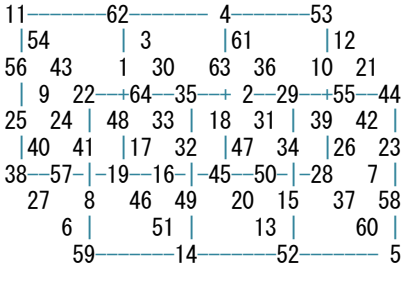

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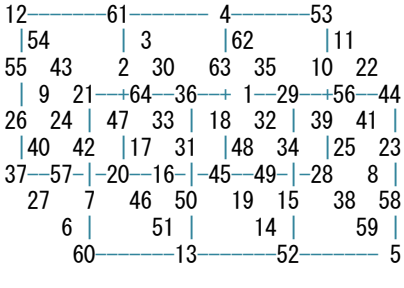

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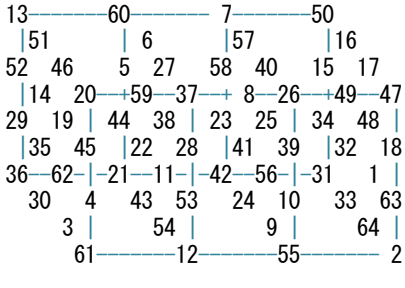

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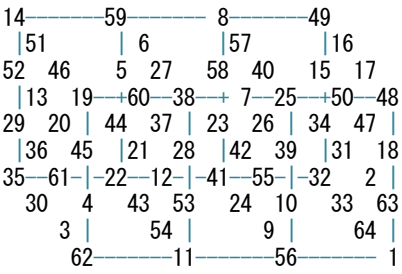

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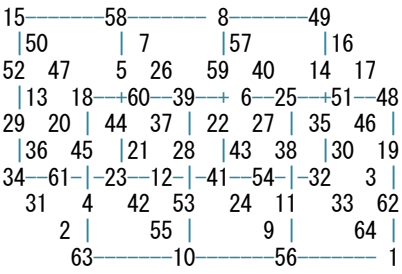

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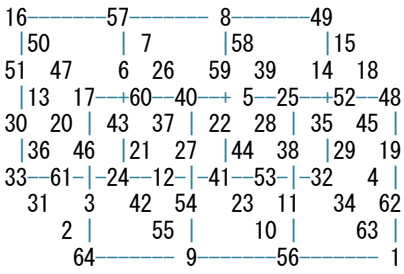

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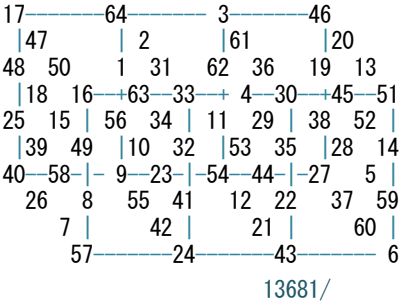

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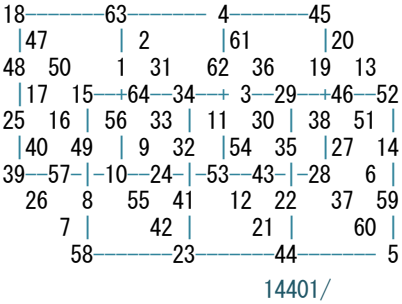

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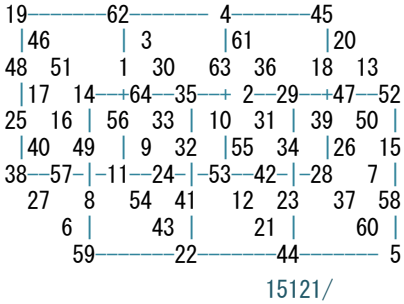

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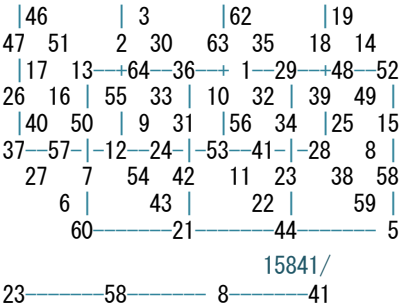

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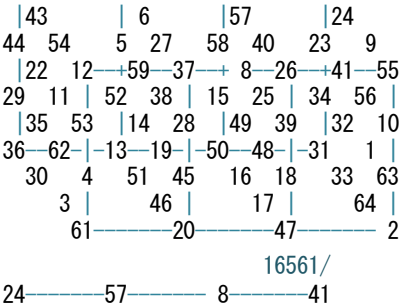

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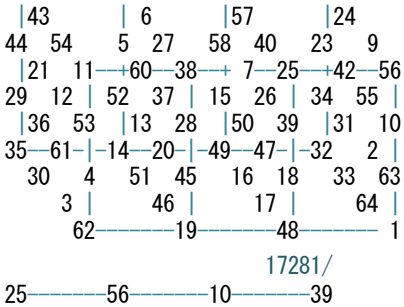

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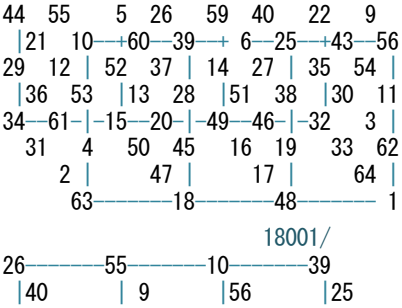

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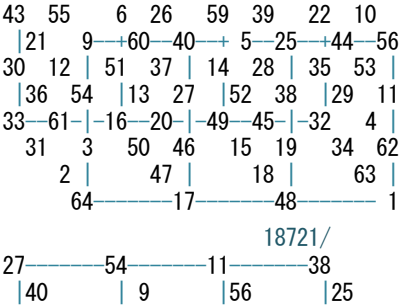

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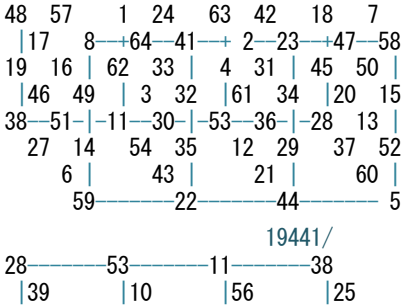

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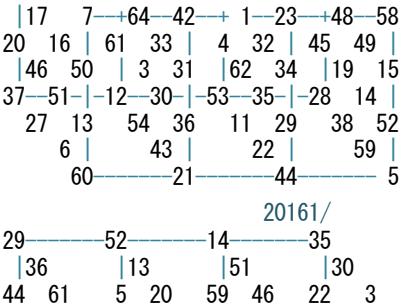

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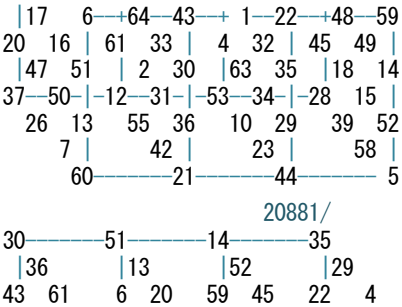

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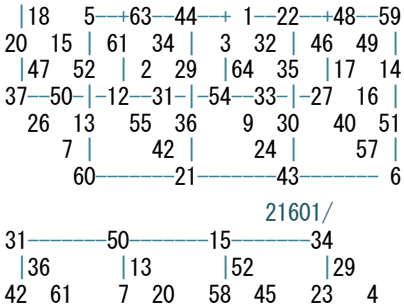

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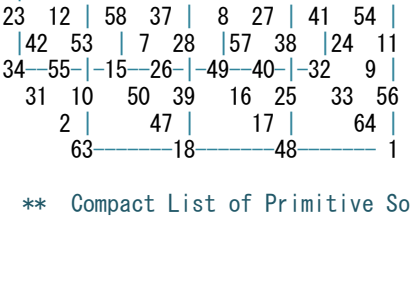

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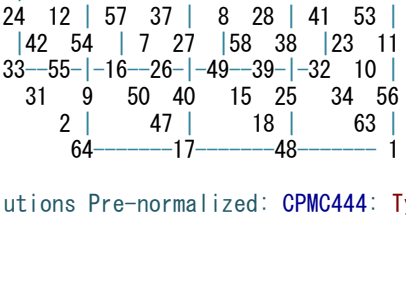

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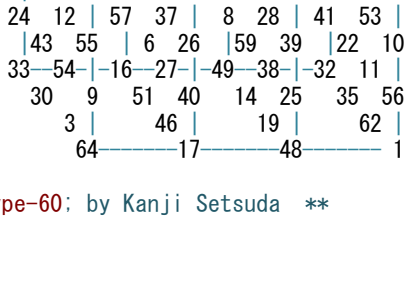

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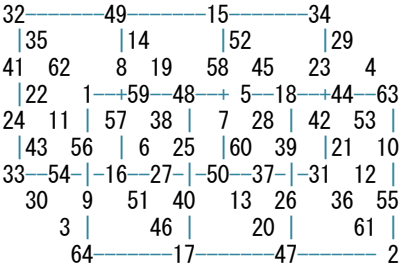

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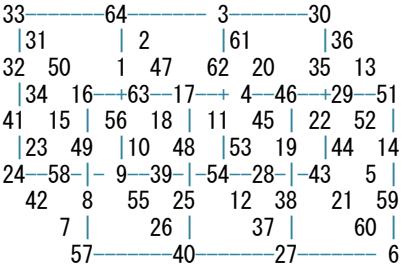

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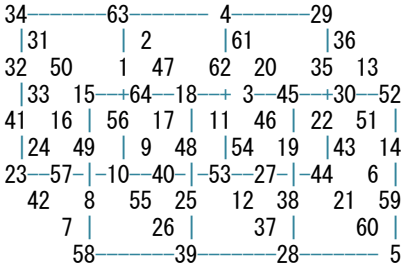

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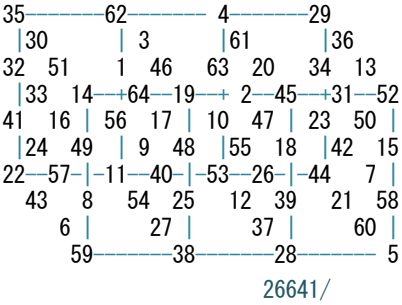

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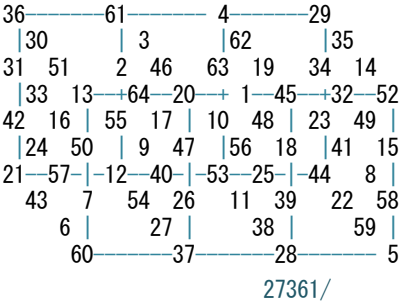

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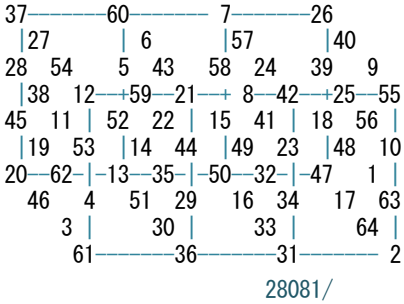

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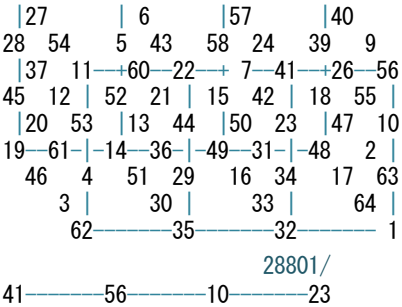

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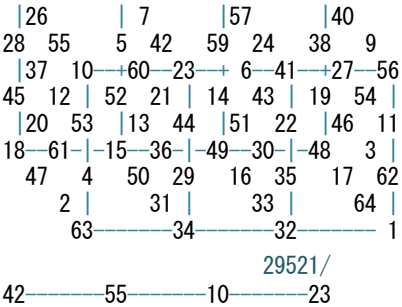

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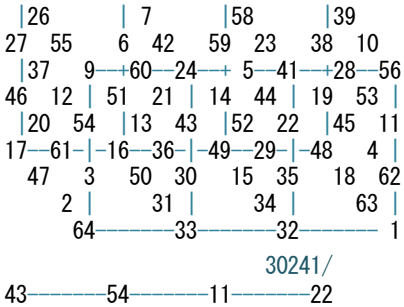

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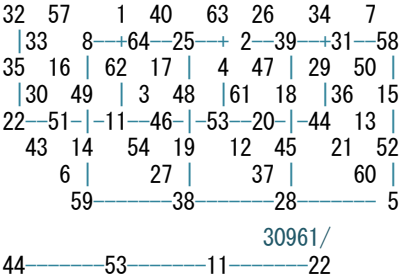

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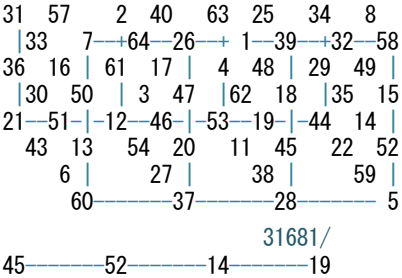

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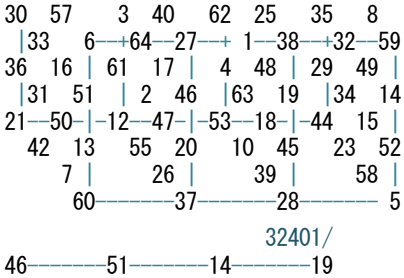

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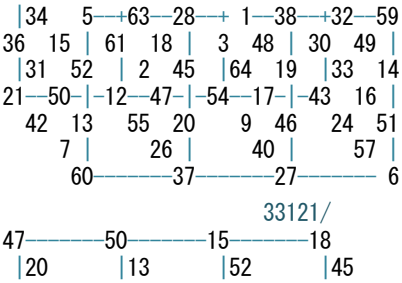

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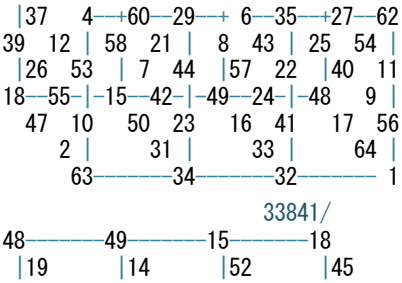

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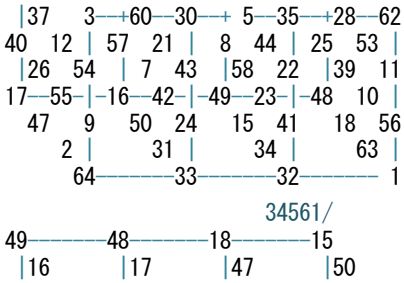

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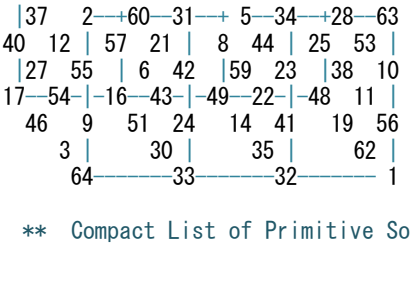

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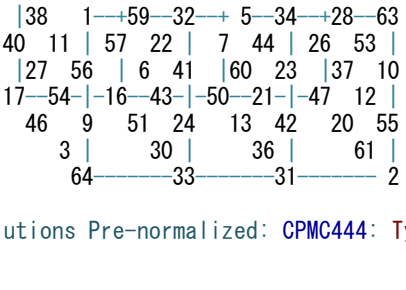

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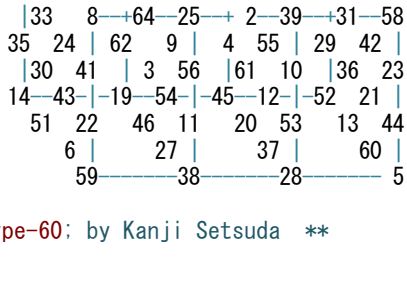

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-60: by Kanji Setsuda **

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36  24 | 61    9 |  4  56 | 29  41 |
  |30  42  | 3  55  |62  10  |35  23
13--43--|-20--54--|-45--11--|-52  22 |
  51  21   46  12   19  53   14  44
      6 |      27 |      38 |      59 |
        60--------37--------28-------- 5

                36001/
51--------46--------19--------14
  |16       |17       |48       |49
30  57    3  40    62  25    35   8
  |33    6--+64--27--+ 1--38--+32--59
36  24 | 61    9 |  4  56 | 29  41 |
  |31  43  | 2  54  |63  11  |34  22
13--42--|-20--55--|-45--10--|-52  23 |
  50  21   47  12   18  53   15  44
      7 |      26 |      39 |      58 |
        60--------37--------28-------- 5

                36721/
52--------45--------19--------14
  |15       |18       |48       |49
29  58    4  39    62  25    35   8
  |34    5--+63--28--+ 1--38--+32--59
36  23 | 61   10 |  3  56 | 30  41 |
  |31  44  | 2  53  |64  11  |33  22
13--42--|-20--55--|-46--  9--|-51  24 |
  50  21   47  12   17  54   16  43
      7 |      26 |      40 |      57 |
        60--------37--------27-------- 6

                37441/
53--------44--------22--------11
  |12       |21       |43       |54
28  61    5  36    59  30    38   3
  |37    4--+60--29--+ 6--35--+27--62
39  20 | 58   13 |  8  51 | 25  46 |
  |26  45  | 7  52  |57  14  |40  19
10--47--|-23--50--|-41--16--|-56  17 |
  55  18   42  15   24  49    9  48
      2 |      31 |      33 |      64 |
        63--------34--------32-------- 1

                38161/
54--------43--------22--------11
  |12       |21       |44       |53
27  61    6  36    59  29    38   4
  |37    3--+60--30--+ 5--35--+28--62
40  20 | 57   13 |  8  52 | 25  45 |
  |26  46  | 7  51  |58  14  |39  19
 9--47--|-24--50--|-41--15--|-56  18 |
  55  17   42  16   23  49   10  48
      2 |      31 |      34 |      63 |
        64--------33--------32-------- 1

                38881/
55--------42--------23--------10
  |12       |21       |44       |53
26  61    7  36    58  29    39   4
  |37    2--+60--31--+ 5--34--+28--63
40  20 | 57   13 |  8  52 | 25  45 |
  |27  47  | 6  50  |59  15  |38  18
 9--46--|-24--51--|-41--14--|-56  19 |
  54  17   43  16   22  49   11  48
      3 |      30 |      35 |      62 |
        64--------33--------32-------- 1

                39601/
56--------41--------23--------10
  |11       |22       |44       |53
25  62    8  35    58  29    39   4
  |38    1--+59--32--+ 5--34--+28--63
40  19 | 57   14 |  7  52 | 26  45 |
  |27  48  | 6  49  |60  15  |37  18
 9--46--|-24--51--|-42--13--|-55  20 |
  54  17   43  16   21  50   12  47
      3 |      30 |      36 |      61 |
        64--------33--------31-------- 2

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

                41041/
58--------39--------25--------  8
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23  52   10  45    56  19    41  14
  |34    5--+63--28--+ 1--38--+32--59
42  29 | 55   4  |  9  62 | 24  35 |
  |31  44  | 2  53  |64  11  |33  22
 7--36--|-26--61--|-40--  3--|-57  30 |
  50  21   47  12   17  54   16  43
     13 |      20 |      46 |      51 |
        60--------37--------27-------- 6

                41761/
59--------38--------25--------  8
  |14       |19       |48       |49
22  52   11  45    56  18    41  15
  |35    5--+62--28--+ 1--39--+32--58
43  29 | 54   4  |  9  63 | 24  34 |
  |30  44  | 3  53  |64  10  |33  23
 6--36--|-27--61--|-40--  2--|-57  31 |
  51  21   46  12   17  55   16  42
     13 |      20 |      47 |      50 |
        60--------37--------26-------- 7

                42481/
60--------37--------26--------  7
  |13       |20       |47       |50
21  52   12  45    55  18    42  15
  |36    5--+61--28--+ 2--39--+31--58
43  29 | 54   4  |  9  63 | 24  34 |
  |30  44  | 3  53  |64  10  |33  23
 6--35--|-27--62--|-40--  1--|-57--32 |
  51  22   46  11   17  56   16  41
     14 |      19 |      48 |      49 |
        59--------38--------25-------- 8

                43201/
61--------36--------29--------  4
  |12       |21       |44       |53
20  55   13  42    52  23    45  10
  |37    2--+60--31--+ 5--34--+28--63
46  26 | 51   7  | 14  58 | 19  39 |
  |27  47  | 6  50  |59  15  |38  18
 3--40--|-30--57--|-35--  8--|-62  25 |
  54  17   43  16   22  49   11  48
      9 |      24 |      41 |      56 |
        64--------33--------32-------- 1

                43921/
62--------35--------29--------  4
  |11       |22       |44       |53
19  56   14  41    52  23    45  10
  |38    1--+59--32--+ 5--34--+28--63
46  25 | 51   8  | 13  58 | 20  39 |
  |27  48  | 6  49  |60  15  |37  18
 3--40--|-30--57--|-36--  7--|-61  26 |
  54  17   43  16   21  50   12  47
      9 |      24 |      42 |      55 |
        64--------33--------31-------- 2

                44641/
63--------34--------29--------  4
  |10       |23       |44       |53
18  56   15  41    52  22    45  11
  |39    1--+58--32--+ 5--35--+28--62
47  25 | 50   8  | 13  59 | 20  38 |
  |26  48  | 7  49  |60  14  |37  19
 2--40--|-31--57--|-36--  6--|-61  27 |
  55  17   42  16   21  51   12  46
      9 |      24 |      43 |      54 |
        64--------33--------30-------- 3

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

[Solution Counts(when n1=1/All) = 720/46080]

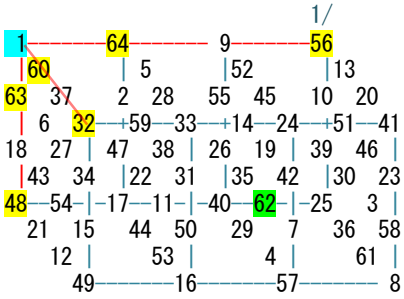
[Solution Counts according to the Positions of Value 1]

1:	720,	2:	720,	3:	720,	4:	720,	5:	720,	6:	720,	7:	720,	8:	720,
9:	720,	10:	720,	11:	720,	12:	720,	13:	720,	14:	720,	15:	720,	16:	720,
17:	720,	18:	720,	19:	720,	20:	720,	21:	720,	22:	720,	23:	720,	24:	720,
25:	720,	26:	720,	27:	720,	28:	720,	29:	720,	30:	720,	31:	720,	32:	720,
33:	720,	34:	720,	35:	720,	36:	720,	37:	720,	38:	720,	39:	720,	40:	720,
41:	720,	42:	720,	43:	720,	44:	720,	45:	720,	46:	720,	47:	720,	48:	720,
49:	720,	50:	720,	51:	720,	52:	720,	53:	720,	54:	720,	55:	720,	56:	720,
57:	720,	58:	720,	59:	720,	60:	720,	61:	720,	62:	720,	63:	720,	64:	720

OK!

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-62; **

1/



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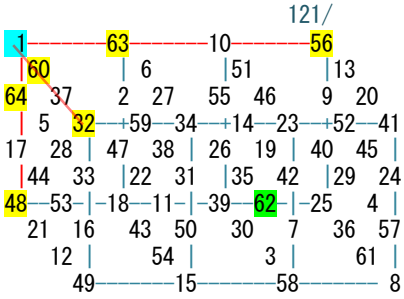

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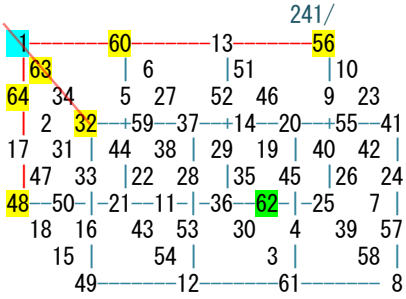

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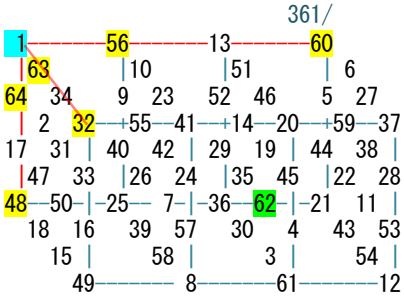

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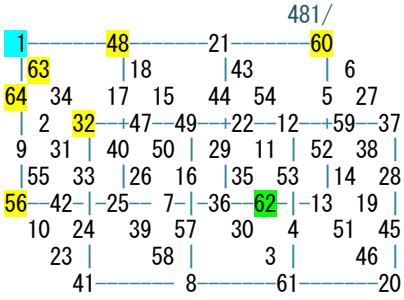

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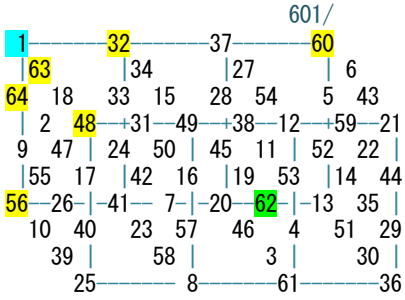

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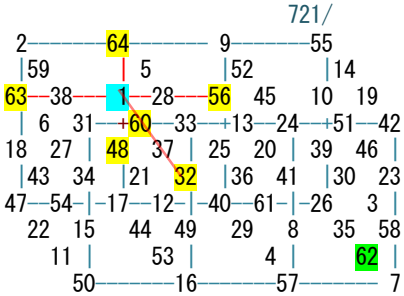

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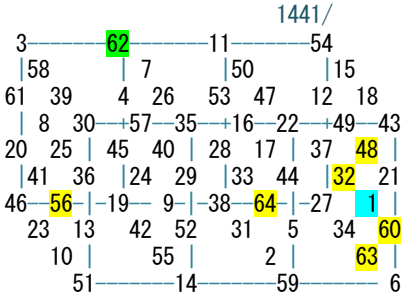

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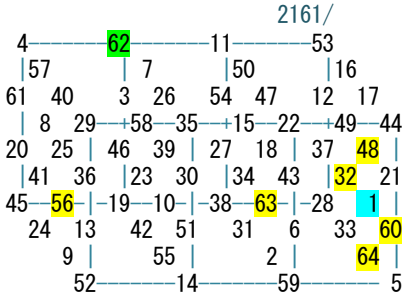

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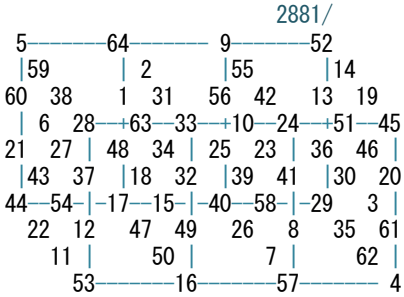

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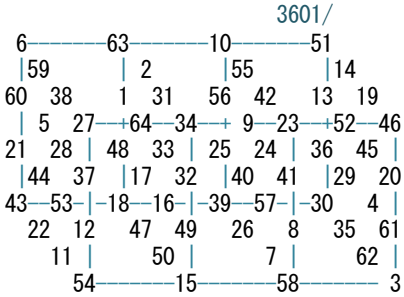

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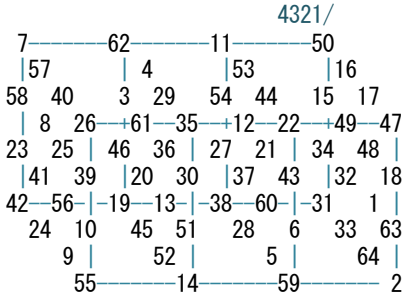

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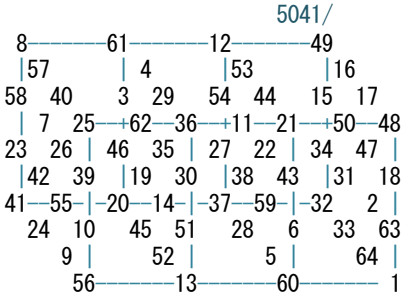

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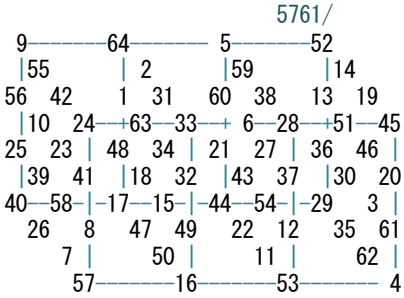

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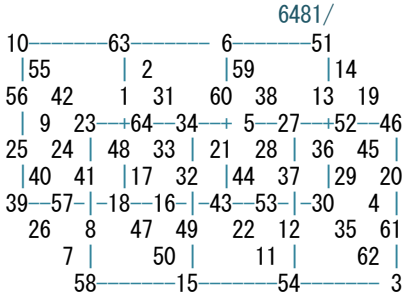

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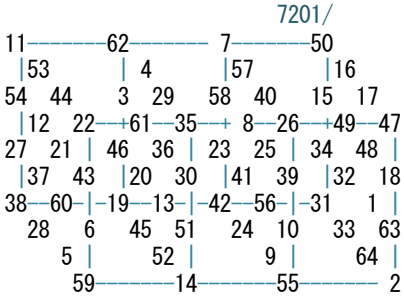

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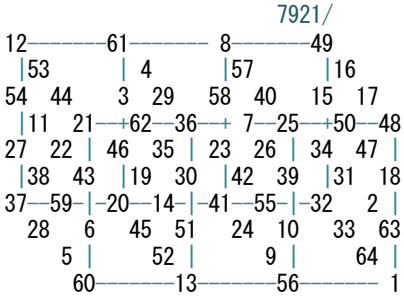

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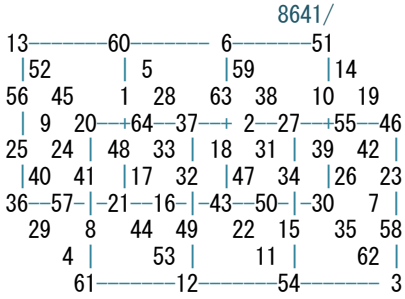

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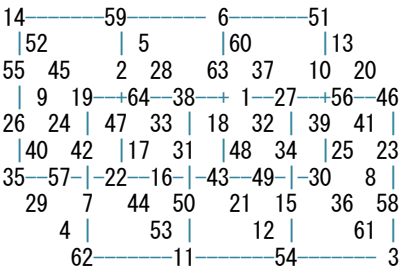

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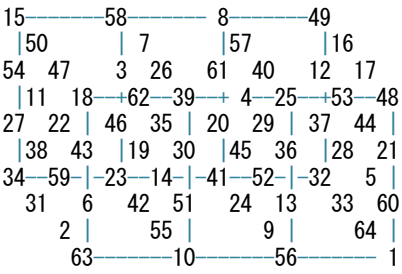

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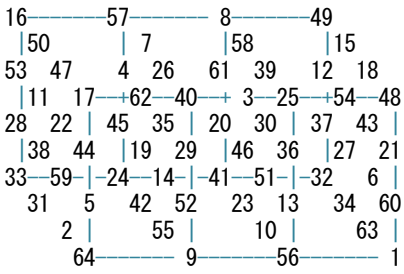

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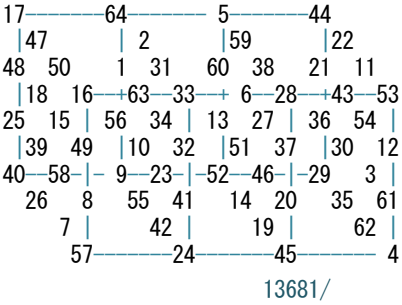

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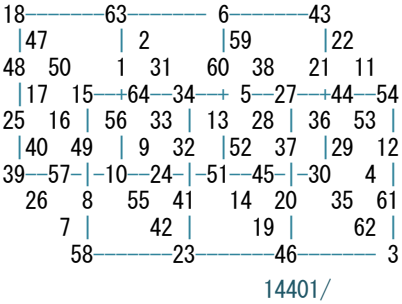

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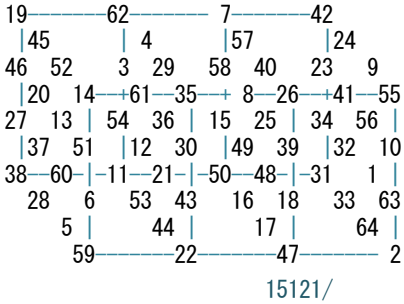

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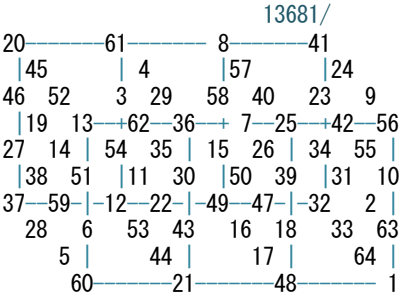

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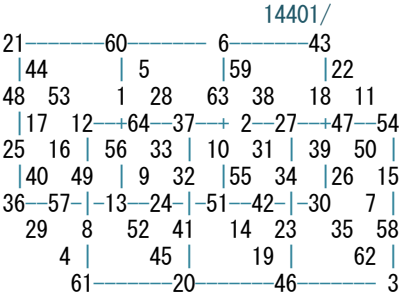

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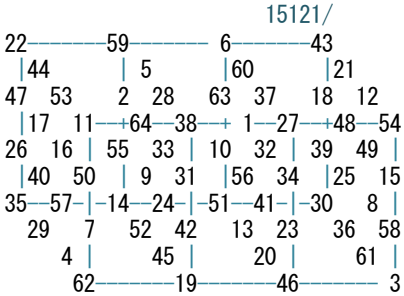

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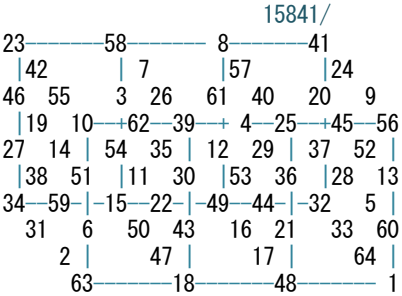

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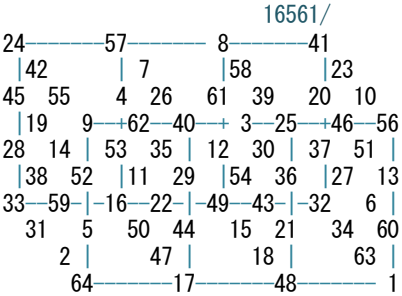

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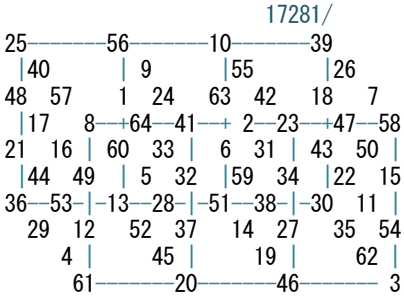

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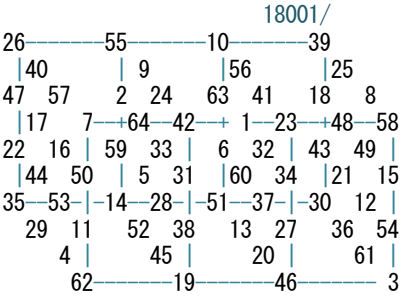

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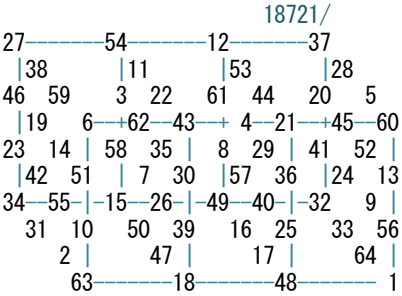

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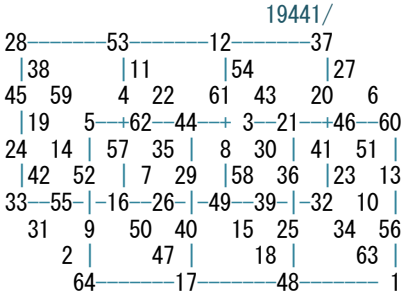

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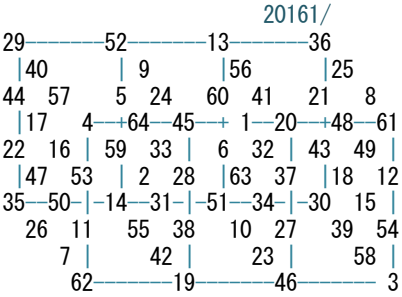

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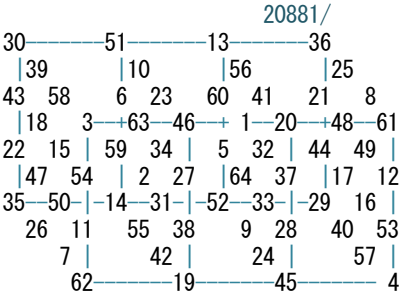

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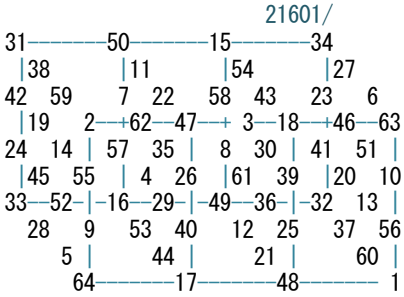

22321/
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41 60 8 21 58 43 23 6
|20 1—+61—48—+ 3—18—+46—63
24 13 | 57 36 | 7 30 | 42 51 |
|45 56 | 4 25 |62 39 |19 10
33—52—|—16—29—|—50—35—|—31 14 |
28 9 53 40 11 26 38 55
5 | 44 | 22 | 59 |
64———17———47——— 2

23041/
33———64——— 5———28
|31| 2|59|38
32 50 1 47 60 22 37 11
|34 16—+63—17—+ 6—44—+27—53
41 15 | 56 18 | 13 43 | 20 54 |
|23 49 |10 48 |51 21 |46 12
24—58—|— 9—39—|—52—30—|—45 3 |
42 8 55 25 14 36 19 61
7 | 26 | 35 | 62 |
57———40———29——— 4

23761/
34———63——— 6———27
|31| 2|59|38
32 50 1 47 60 22 37 11
|33 15—+64—18—+ 5—43—+28—54
41 16 | 56 17 | 13 44 | 20 53 |
|24 49 | 9 48 |52 21 |45 12
23—57—|—10—40—|—51—29—|—46 4 |
42 8 55 25 14 36 19 61
7 | 26 | 35 | 62 |
58———39———30——— 3

24481/
35———62——— 7———26
|29| 4|57|40
30 52 3 45 58 24 39 9
|36 14—+61—19—+ 8—42—+25—55
43 13 | 54 20 | 15 41 | 18 56 |
|21 51 |12 46 |49 23 |48 10
22—60—|—11—37—|—50—32—|—47 1 |
44 6 53 27 16 34 17 63
5 | 28 | 33 | 64 |
59———38———31——— 2

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

25921/
37———60——— 6———27
|28| 5|59|38
32 53 1 44 63 22 34 11
|33 12—+64—21—+ 2—43—+31—54
41 16 | 56 17 | 10 47 | 23 50 |
|24 49 | 9 48 |55 18 |42 15
20—57—|—13—40—|—51—26—|—46 7 |
45 8 52 25 14 39 19 58
4 | 29 | 35 | 62 |
61———36———30——— 3

26641/
38———59——— 6———27
|28| 5|60|37
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|33 11—+64—22—+ 1—43—+32—54
42 16 | 55 17 | 10 48 | 23 49 |
|24 50 | 9 47 |56 18 |41 15
19—57—|—14—40—|—51—25—|—46 8 |
45 7 52 26 13 39 20 58
4 | 29 | 36 | 61 |
62———35———30——— 3

27361/
39———58——— 8———25
|26| 7|57|40
30 55 3 42 61 24 36 9
|35 10—+62—23—+ 4—41—+29—56
43 14 | 54 19 | 12 45 | 21 52 |
|22 51 |11 46 |53 20 |44 13
18—59—|—15—38—|—49—28—|—48 5 |
47 6 50 27 16 37 17 60
2 | 31 | 33 | 64 |
63———34———32——— 1

28081/
40———57——— 8———25
|26| 7|58|39
29 55 4 42 61 23 36 10
|35 9—+62—24—+ 3—41—+30—56
44 14 | 53 19 | 12 46 | 21 51 |
|22 52 |11 45 |54 20 |43 13
17—59—|—16—38—|—49—27—|—48 6 |
47 5 50 28 15 37 18 60
2 | 31 | 34 | 63 |
64———33———32——— 1

28801/
41———56———10———23
|24| 9|55|42
32 57 1 40 63 26 34 7
|33 8—+64—25—+ 2—39—+31—58
37 16 | 60 17 | 6 47 | 27 50 |
|28 49 | 5 48 |59 18 |38 15
20—53—|—13—44—|—51—22—|—46 11 |
45 12 52 21 14 43 19 54
4 | 29 | 35 | 62 |
61———36———30——— 3

29521/
42———55———10———23
|24| 9|56|41
31 57 2 40 63 25 34 8
|33 7—+64—26—+ 1—39—+32—58
38 16 | 59 17 | 6 48 | 27 49 |
|28 50 | 5 47 |60 18 |37 15
19—53—|—14—44—|—51—21—|—46 12 |
45 11 52 22 13 43 20 54
4 | 29 | 36 | 61 |
62———35———30——— 3

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

30961/
44———53———12———21
|22|11|54|43
29 59 4 38 61 27 36 6
|35 5—+62—28—+ 3—37—+30—60
40 14 | 57 19 | 8 46 | 25 51 |
|26 52 | 7 45 |58 20 |39 13
17—55—|—16—42—|—49—23—|—48 10 |
47 9 50 24 15 41 18 56
2 | 31 | 34 | 63 |
64———33———32——— 1

31681/
45———52———13———20
|24| 9|56|41
28 57 5 40 60 25 37 8
|33 4—+64—29—+ 1—36—+32—61
38 16 | 59 17 | 6 48 | 27 49 |
|31 53 | 2 44 |63 21 |34 12
19—50—|—14—47—|—51—18—|—46 15 |
42 11 55 22 10 43 23 54
7 | 26 | 39 | 58 |
62———35———30——— 3

32401/
46———51———13———20
|23|10|56|41
27 58 6 39 60 25 37 8
|34 3—+63—30—+ 1—36—+32—61
38 15 | 59 18 | 5 48 | 28 49 |
|31 54 | 2 43 |64 21 |33 12
19—50—|—14—47—|—52—17—|—45 16 |
42 11 55 22 9 44 24 53
7 | 26 | 40 | 57 |
62———35———29——— 4

33121/
47———50———15———18
|22|11|54|43
26 59 7 38 58 27 39 6
|35 2—+62—31—+ 3—34—+30—63
40 14 | 57 19 | 8 46 | 25 51 |
|29 55 | 4 42 |61 23 |36 10
17—52—|—16—45—|—49—20—|—48 13 |
44 9 53 24 12 41 21 56
5 | 28 | 37 | 60 |
64———33———32——— 1

33841/
48———49———15———18
|21|12|54|43
25 60 8 37 58 27 39 6
|36 1—+61—32—+ 3—34—+30—63
40 13 | 57 20 | 7 46 | 26 51 |
|29 56 | 4 41 |62 23 |35 10
17—52—|—16—45—|—50—19—|—47 14 |
44 9 53 24 11 42 22 55
5 | 28 | 38 | 59 |
64———33———31——— 2

34561/
49———48———18———15
|16|17|47|50
32 57 1 40 63 26 34 7
|33 8—+64—25—+ 2—39—+31—58
37 24 | 60 9 | 6 55 | 27 42 |
|28 41 | 5 56 |59 10 |38 23
12—45—|—21—52—|—43—14—|—54 19 |
53 20 44 13 22 51 11 46
4 | 29 | 35 | 62 |
61———36———30——— 3

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-62; by Kanji Setsuda **

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

                36001/
51--------46--------20--------13
  |14       |19       |45       |52
30  59    3  38    61  28    36   5
  |35    6--+62--27--+ 4--37--+29--60
39  22 | 58  11 |  8  53 | 25  44 |
  |26  43 |  7  54 |57  12 |40  21
10--47--|-23--50--|-41--16--|-56  17 |
  55  18   42  15   24  49    9  48
    2 |      31 |      33 |      64 |
      63--------34--------32-------- 1

                36721/
52--------45--------20--------13
  |14       |19       |46       |51
29  59    4  38    61  27    36   6
  |35    5--+62--28--+ 3--37--+30--60
40  22 | 57  11 |  8  54 | 25  43 |
  |26  44 |  7  53 |58  12 |39  21
 9--47--|-24--50--|-41--15--|-56  18 |
  55  17   42  16   23  49   10  48
    2 |      31 |      34 |      63 |
      64--------33--------32-------- 1

                37441/
53--------44--------21--------12
  |16       |17       |48       |49
28  57    5  40    60  25    37   8
  |33    4--+64--29--+ 1--36--+32--61
38  24 | 59    9 |  6  56 | 27  41 |
  |31  45 |  2  52 |63  13 |34  20
11--42--|-22--55--|-43--10--|-54  23 |
  50  19   47  14   18  51   15  46
    7 |      26 |      39 |      58 |
      62--------35--------30-------- 3

                38161/
54--------43--------21--------12
  |15       |18       |48       |49
27  58    6  39    60  25    37   8
  |34    3--+63--30--+ 1--36--+32--61
38  23 | 59  10 |  5  56 | 28  41 |
  |31  46 |  2  51 |64  13 |33  20
11--42--|-22--55--|-44--  9--|-53  24 |
  50  19   47  14   17  52   16  45
    7 |      26 |      40 |      57 |
      62--------35--------29-------- 4

                38881/
55--------42--------23--------10
  |14       |19       |46       |51
26  59    7  38    58  27    39   6
  |35    2--+62--31--+ 3--34--+30--63
40  22 | 57  11 |  8  54 | 25  43 |
  |29  47 |  4  50 |61  15 |36  18
 9--44--|-24--53--|-41--12--|-56  21 |
  52  17   45  16   20  49   13  48
    5 |      28 |      37 |      60 |
      64--------33--------32-------- 1

                39601/
56--------41--------23--------10
  |13       |20       |46       |51
25  60    8  37    58  27    39   6
  |36    1--+61--32--+ 3--34--+30--63
40  21 | 57  12 |  7  54 | 26  43 |
  |29  48 |  4  49 |62  15 |35  18
 9--44--|-24--53--|-42--11--|-55  22 |
  52  17   45  16   19  50   14  47
    5 |      28 |      38 |      59 |
      64--------33--------31-------- 2

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

                41041/
58--------39--------25--------  8
  |15       |18       |48       |49
23  54    10  43    56  21    41  12
  |34    3--+63--30--+ 1--36--+32--61
42  27 | 55  6 |  9  60 | 24  37 |
  |31  46 |  2  51 |64  13 |33  20
 7--38--|-26--59--|-40--  5--|-57  28 |
  50  19   47  14   17  52   16  45
    11 |      22 |      44 |      53 |
      62--------35--------29-------- 4

                41761/
59--------38--------27--------  6
  |14       |19       |46       |51
22  55    11  42    54  23    43  10
  |35    2--+62--31--+ 3--34--+30--63
44  26 | 53  7 | 12  58 | 21  39 |
  |29  47 |  4  50 |61  15 |36  18
 5--40--|-28--57--|-37--  8--|-60  25 |
  52  17   45  16   20  49   13  48
    9 |      24 |      41 |      56 |
      64--------33--------32-------- 1

                42481/
60--------37--------27--------  6
  |13       |20       |46       |51
21  56    12  41    54  23    43  10
  |36    1--+61--32--+ 3--34--+30--63
44  25 | 53  8 | 11  58 | 22  39 |
  |29  48 |  4  49 |62  15 |35  18
 5--40--|-28--57--|-38--  7--|-59  26 |
  52  17   45  16   19  50   14  47
    9 |      24 |      42 |      55 |
      64--------33--------31-------- 2

                43201/
61--------36--------25--------  8
  |12       |21       |48       |49
20  54    13  43    56  18    41  15
  |37    3--+60--30--+ 1--39--+32--58
45  27 | 52  6 |  9  63 | 24  34 |
  |28  46 |  5  51 |64  10 |33  23
 4--38--|-29--59--|-40--  2--|-57  31 |
  53  19   44  14   17  55   16  42
    11 |      22 |      47 |      50 |
      62--------35--------26--------  7

                43921/
62--------35--------26--------  7
  |11       |22       |47       |50
19  54    14  43    55  18    42  15
  |38    3--+59--30--+ 2--39--+31--58
45  27 | 52  6 |  9  63 | 24  34 |
  |28  46 |  5  51 |64  10 |33  23
 4--37--|-29--60--|-40--  1--|-57--32 |
  53  20   44  13   17  56   16  41
    12 |      21 |      48 |      49 |
      61--------36--------25--------  8

                44641/
63--------34--------27--------  6
  |10       |23       |46       |51
18  56    15  41    54  20    43  13
  |39    1--+58--32--+ 3--37--+30--60
47  25 | 50  8 | 11  61 | 22  36 |
  |26  48 |  7  49 |62  12 |35  21
 2--40--|-31--57--|-38--  4--|-59  29 |
  55  17   42  16   19  53   14  44
    9 |      24 |      45 |      52 |
      64--------33--------28--------  5

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

[Solution Counts(when n1=1/All) = 720/46080]

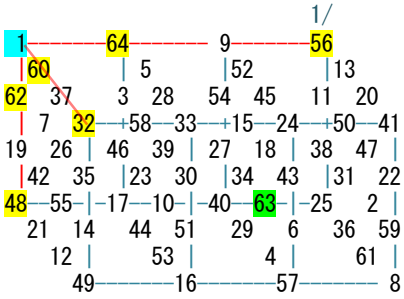
[Solution Counts according to the Positions of Value 1]

1:	720,	2:	720,	3:	720,	4:	720,	5:	720,	6:	720,	7:	720,	8:	720,
9:	720,	10:	720,	11:	720,	12:	720,	13:	720,	14:	720,	15:	720,	16:	720,
17:	720,	18:	720,	19:	720,	20:	720,	21:	720,	22:	720,	23:	720,	24:	720,
25:	720,	26:	720,	27:	720,	28:	720,	29:	720,	30:	720,	31:	720,	32:	720,
33:	720,	34:	720,	35:	720,	36:	720,	37:	720,	38:	720,	39:	720,	40:	720,
41:	720,	42:	720,	43:	720,	44:	720,	45:	720,	46:	720,	47:	720,	48:	720,
49:	720,	50:	720,	51:	720,	52:	720,	53:	720,	54:	720,	55:	720,	56:	720,
57:	720,	58:	720,	59:	720,	60:	720,	61:	720,	62:	720,	63:	720,	64:	720

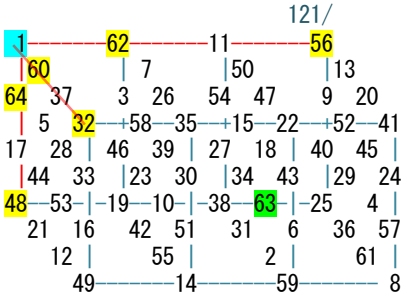
OK!

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-63; **

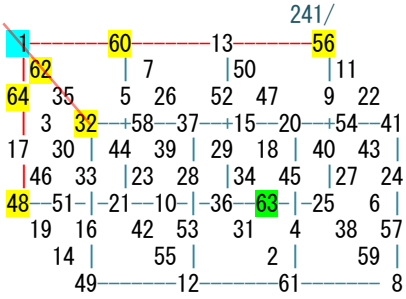
1/



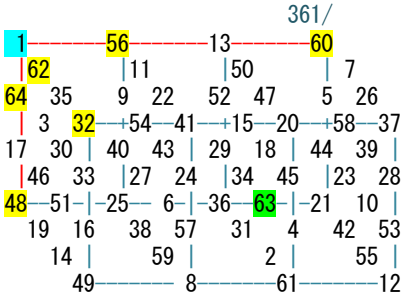
121/



241/



361/



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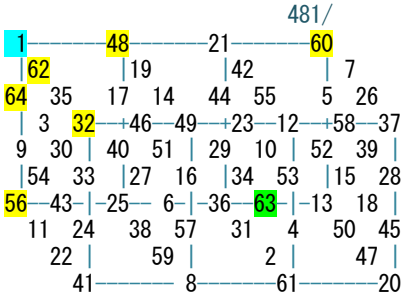

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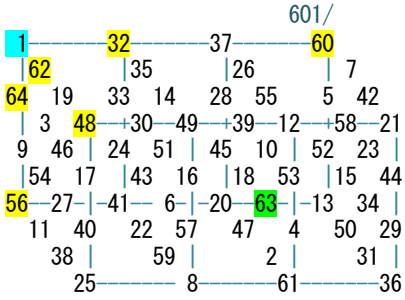

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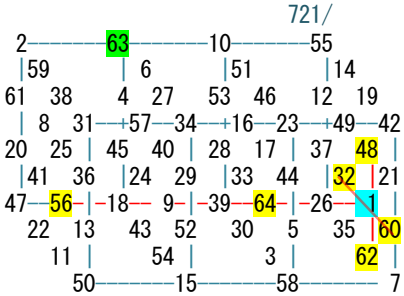

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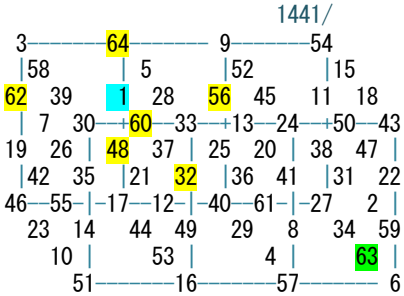

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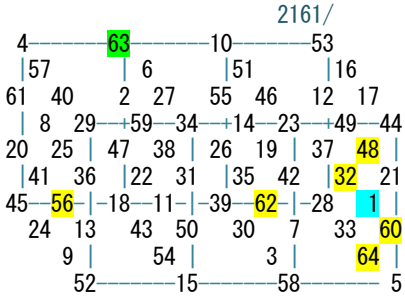

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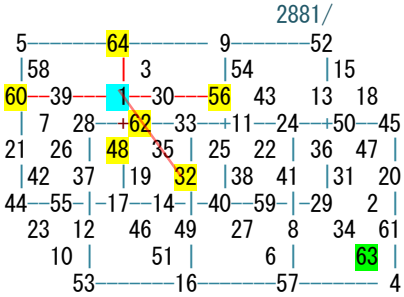

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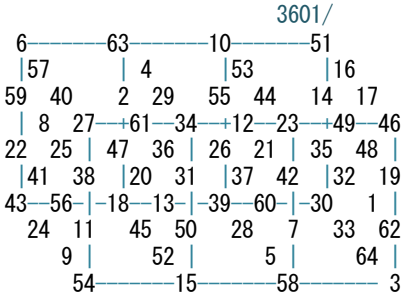

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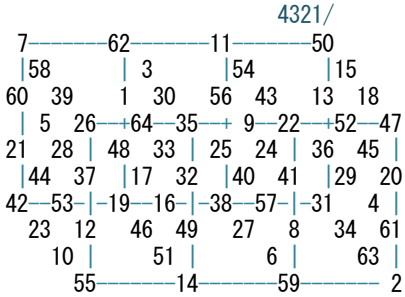

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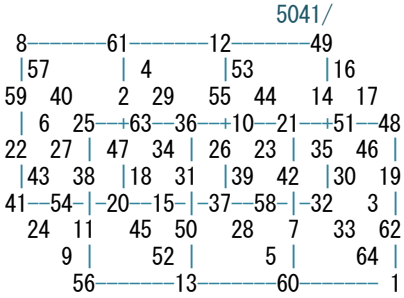

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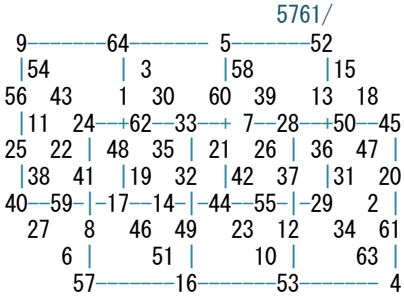

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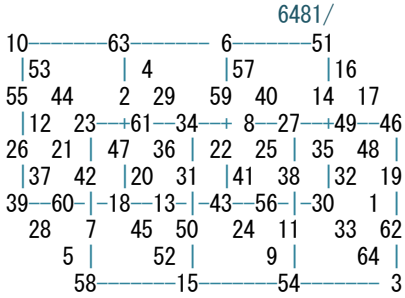

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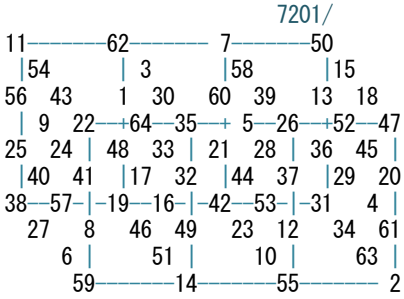

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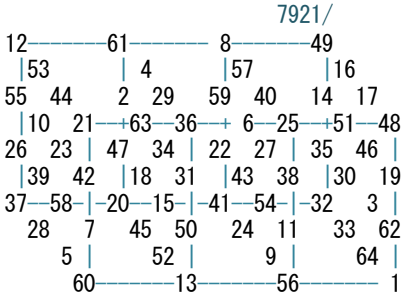

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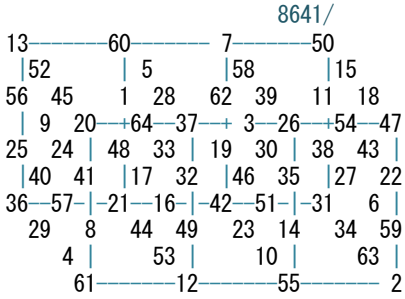

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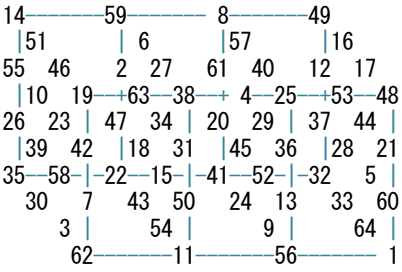

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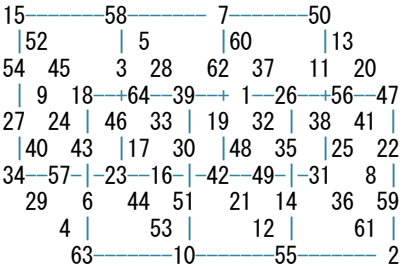

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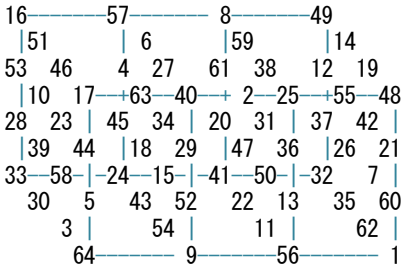

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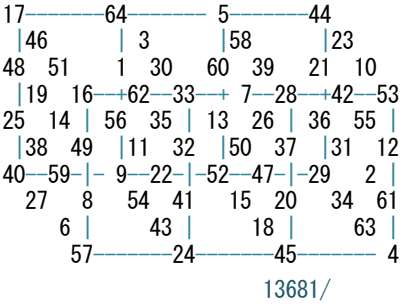

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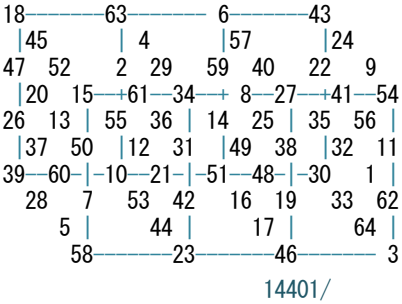

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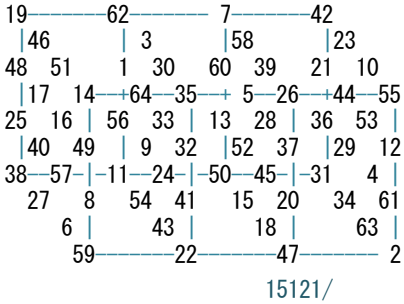

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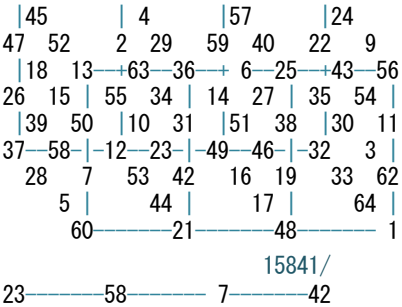

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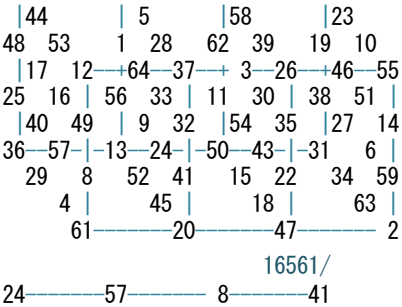
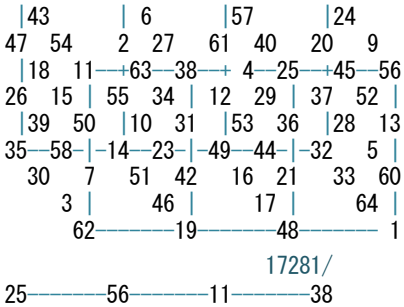


15121/



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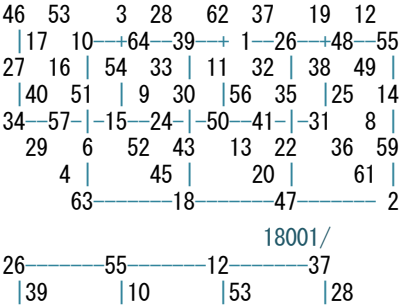

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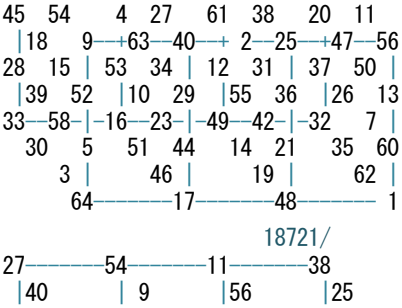

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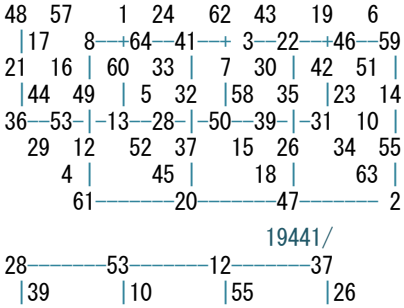

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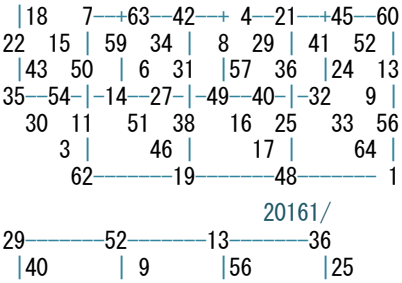

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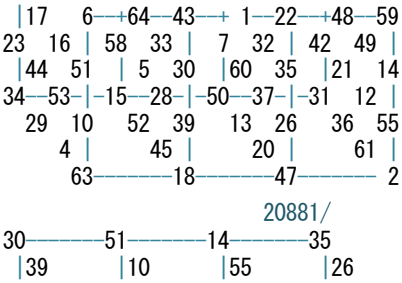

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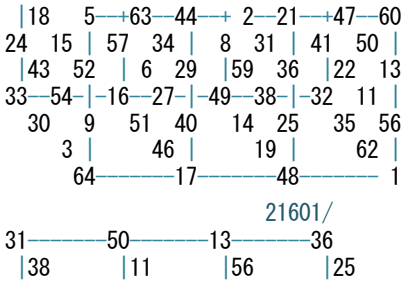

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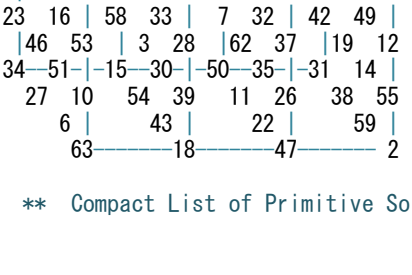

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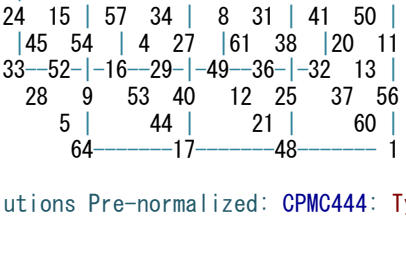

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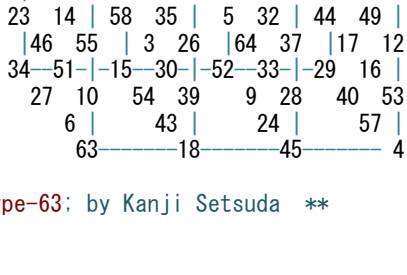

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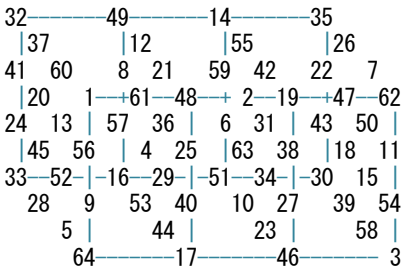

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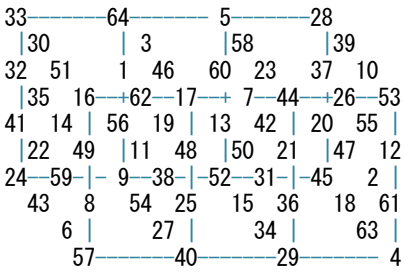

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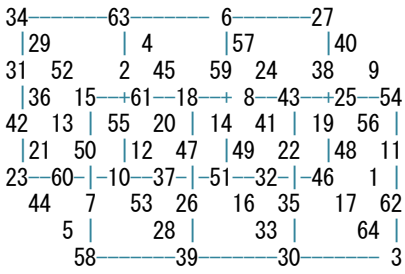

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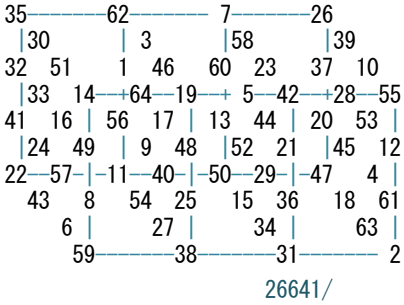

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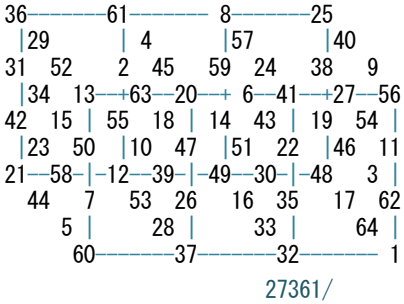

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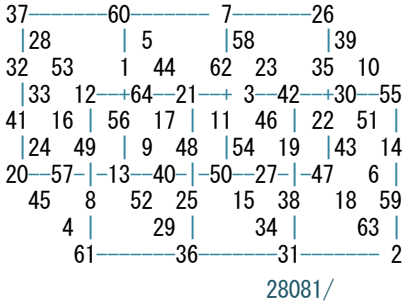

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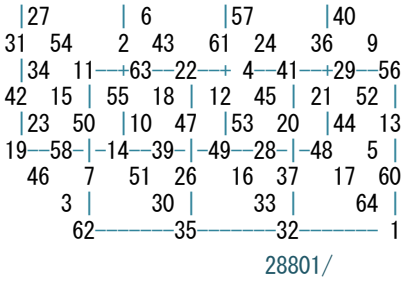

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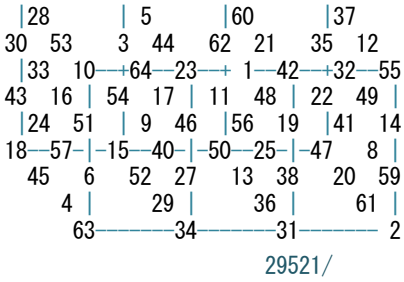

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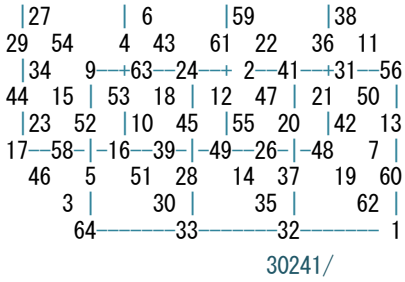

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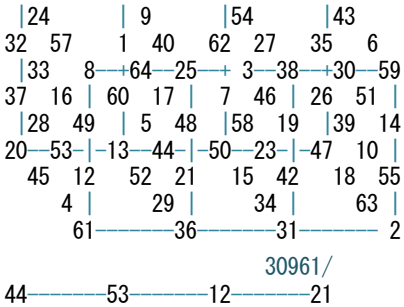

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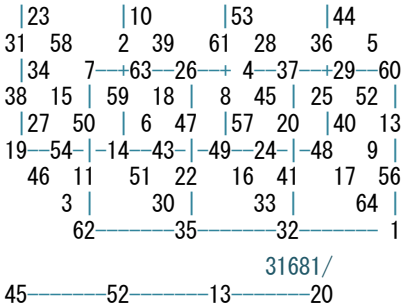

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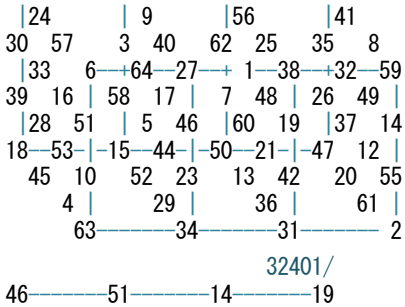
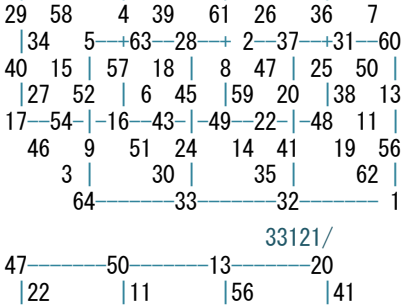
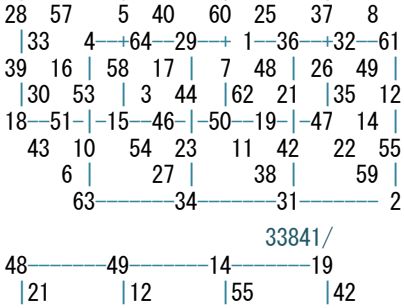


30961/



31681/



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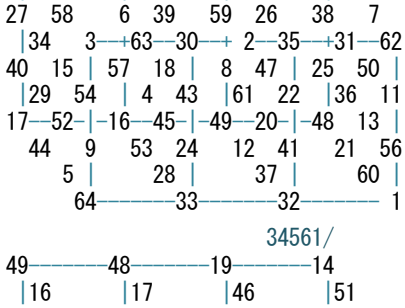

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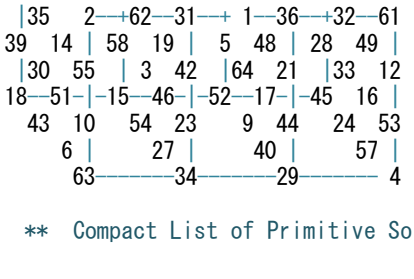

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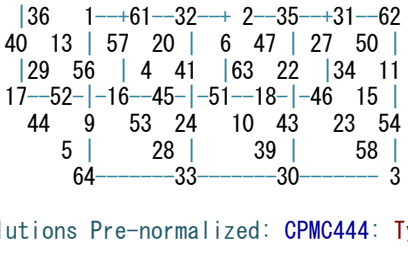

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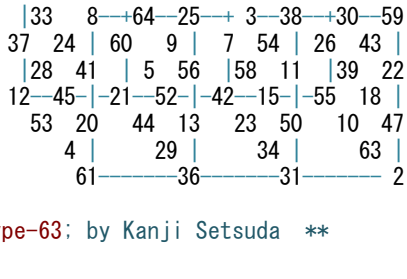
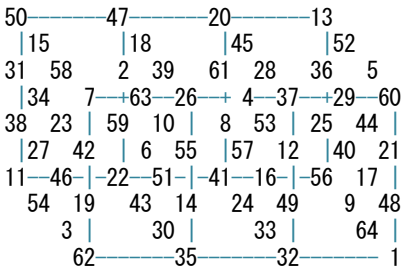


** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-63: by Kanji Setsuda **

35281/



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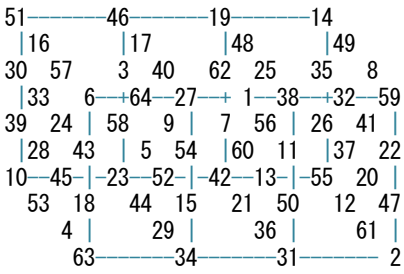

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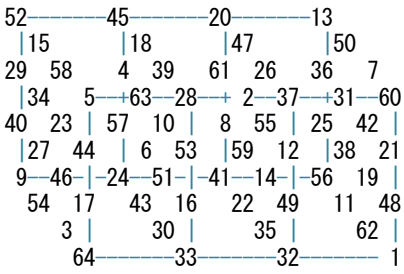

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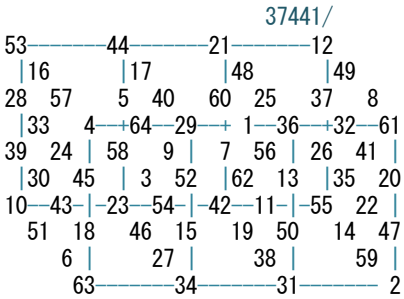

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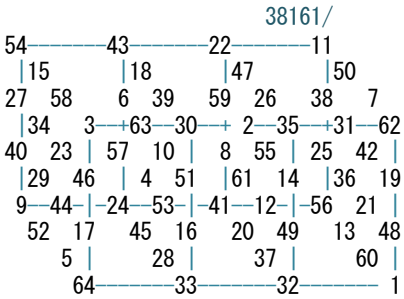
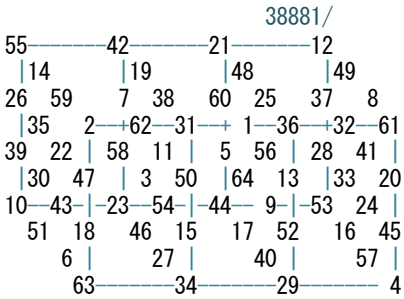
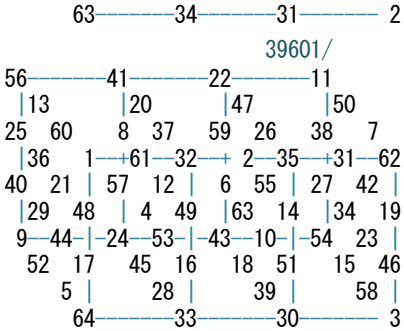


38881/



39601/



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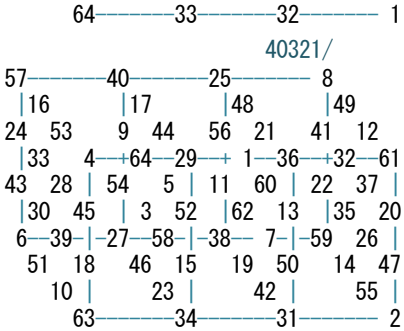
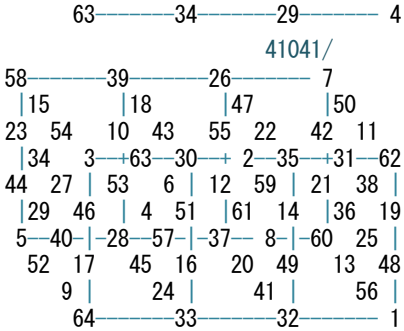


41041/



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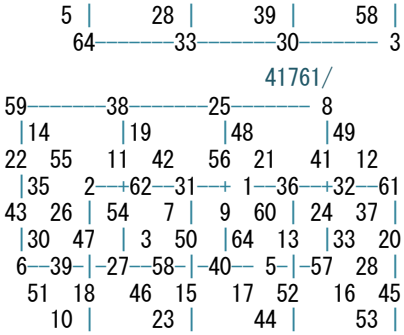
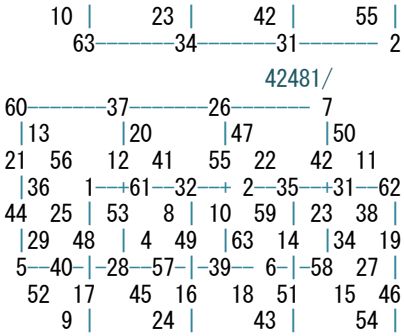


42481/



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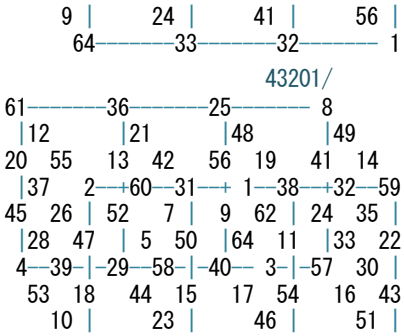

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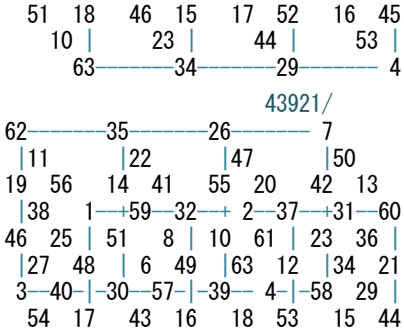
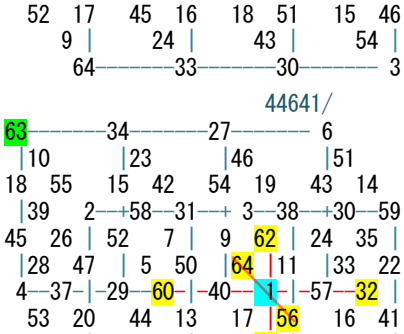


44641/



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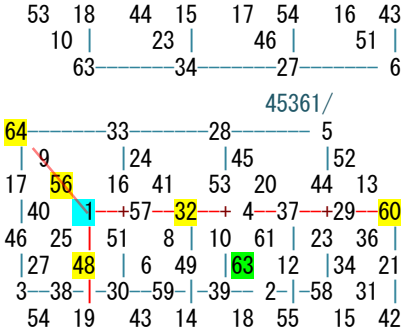

[Solution Counts(when n1=1/All) = 720/46080]

[Solution Counts according to the Positions of Value 1]

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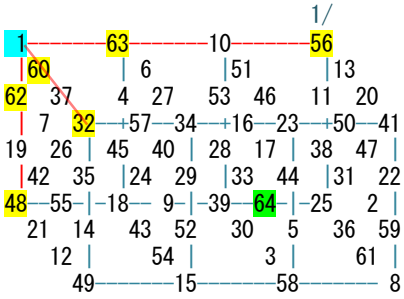
9:	720,	10:	720,	11:	720,	12:	720,	13:	720,	14:	720,	15:	720,	16:	720,
17:	720,	18:	720,	19:	720,	20:	720,	21:	720,	22:	720,	23:	720,	24:	720,
25:	720,	26:	720,	27:	720,	28:	720,	29:	720,	30:	720,	31:	720,	32:	720,
33:	720,	34:	720,	35:	720,	36:	720,	37:	720,	38:	720,	39:	720,	40:	720,
41:	720,	42:	720,	43:	720,	44:	720,	45:	720,	46:	720,	47:	720,	48:	720,
49:	720,	50:	720,	51:	720,	52:	720,	53:	720,	54:	720,	55:	720,	56:	720,
57:	720,	58:	720,	59:	720,	60:	720,	61:	720,	62:	720,	63:	720,	64:	720

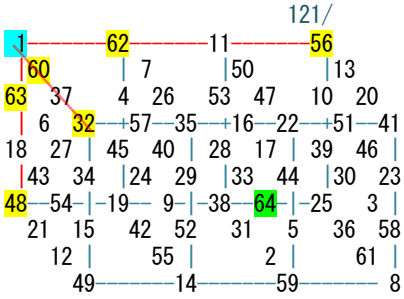
OK!

** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-64; **

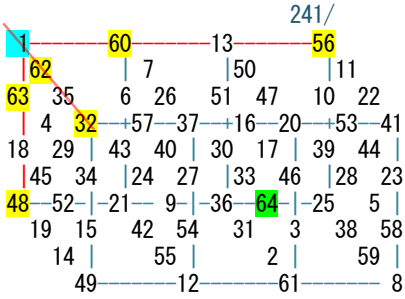
1/



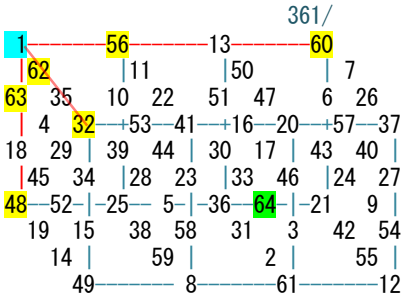
121/



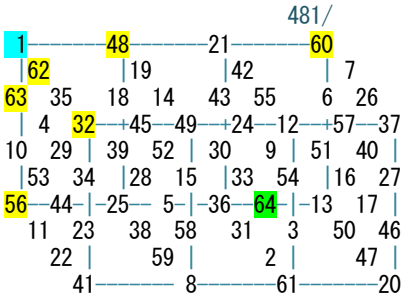
241/



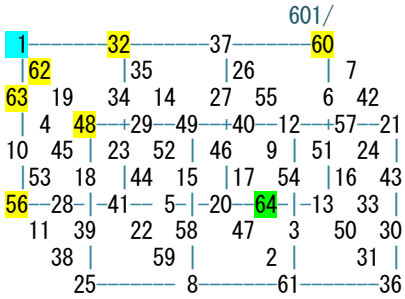
361/



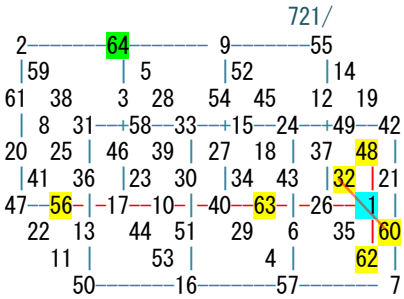
481/



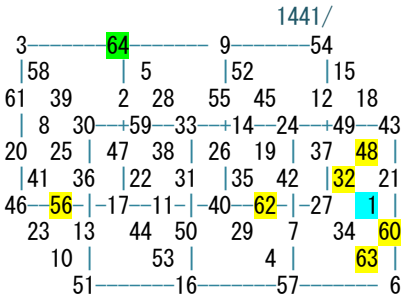
601/



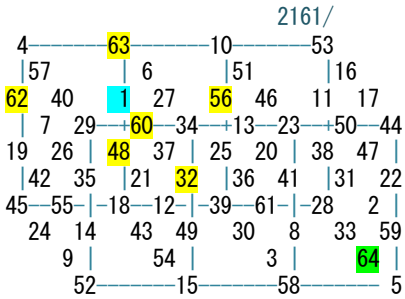
721/



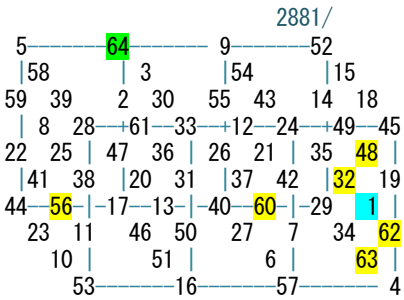
1441/



2161/



2881/



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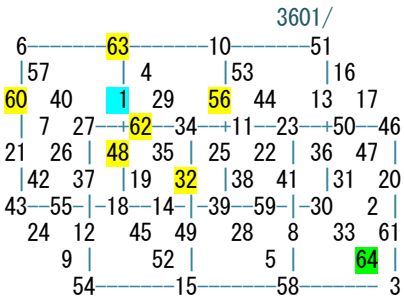
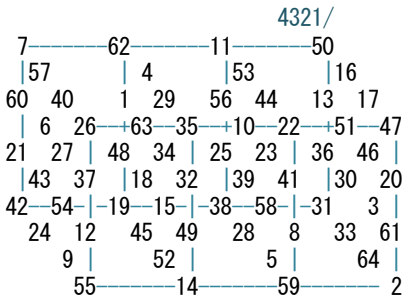


4321/



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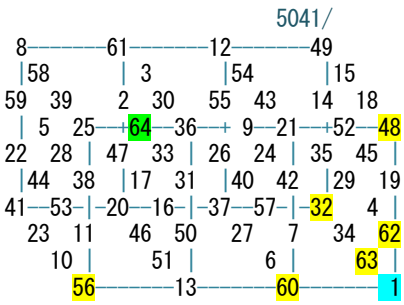

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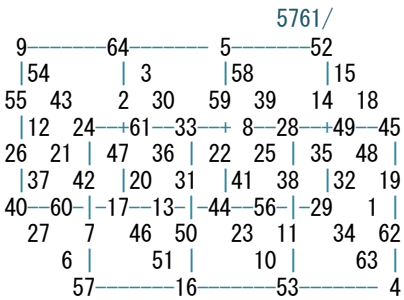

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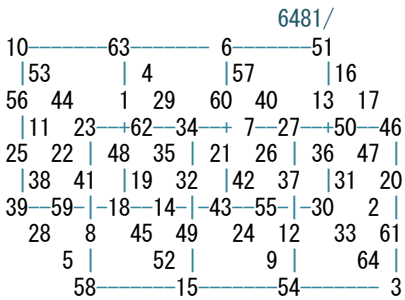

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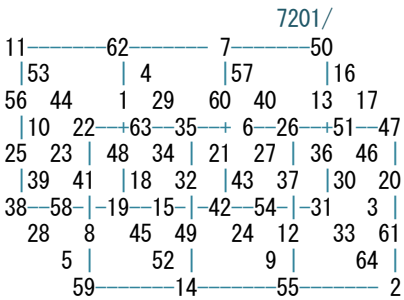

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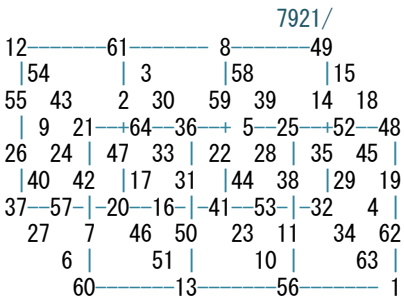
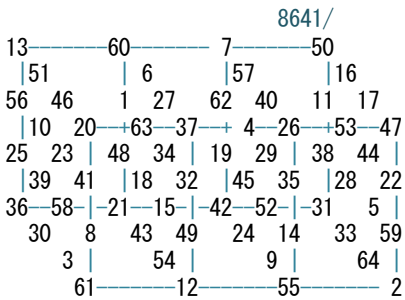
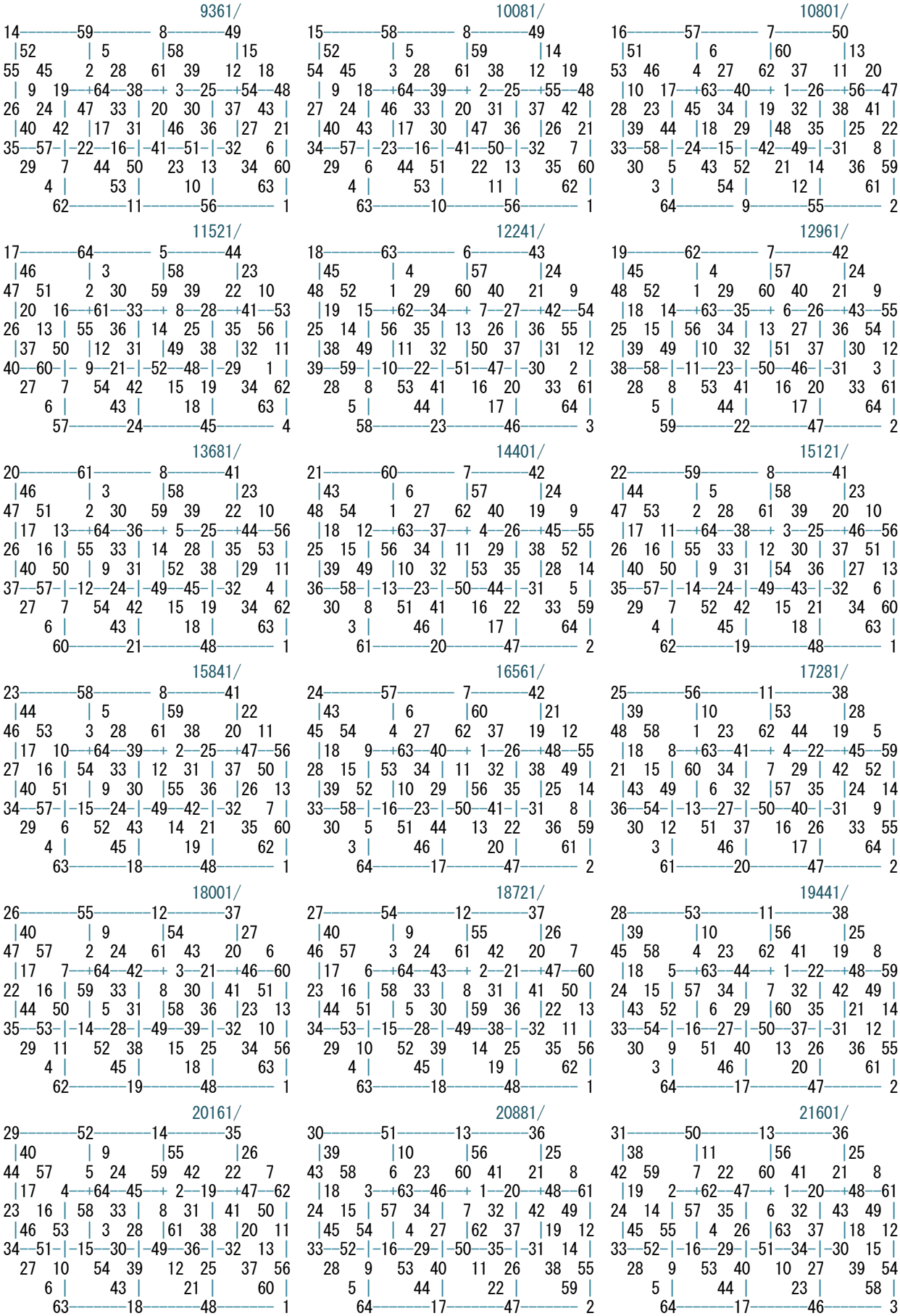


8641/

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11521/
12241/
12961/
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14401/
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19441/
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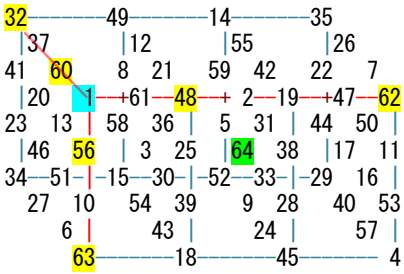
22321/



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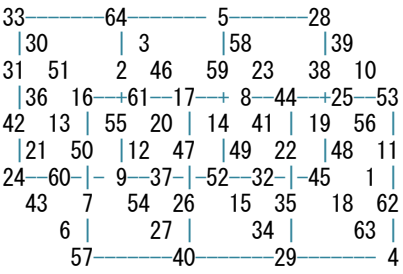
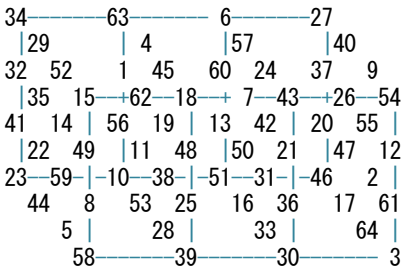
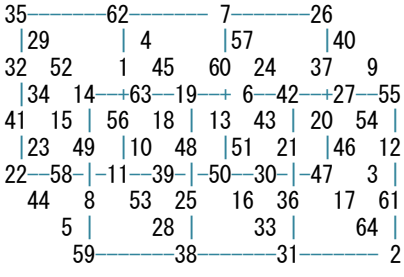


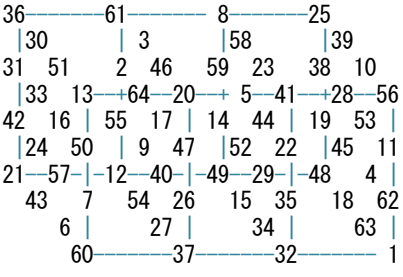
23761/



24481/



25201/



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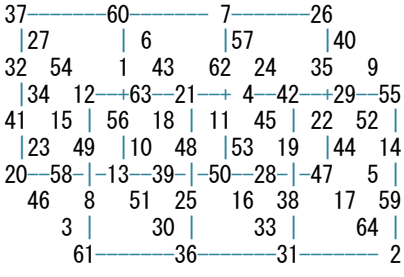

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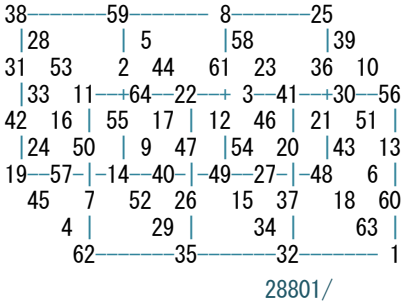
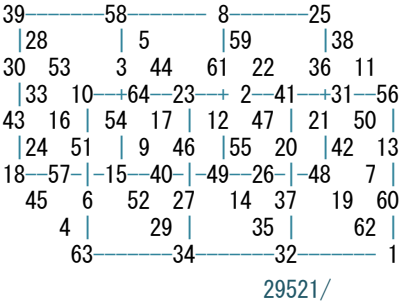


27361/



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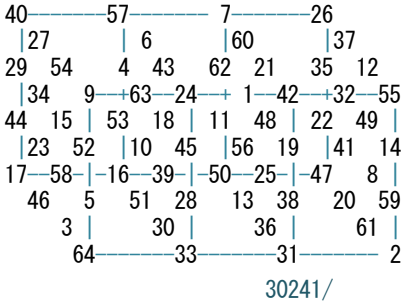
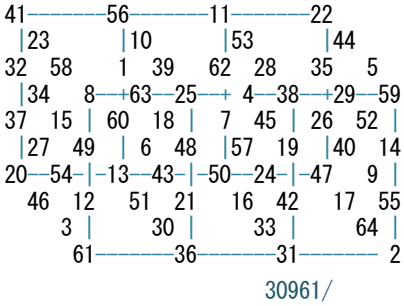
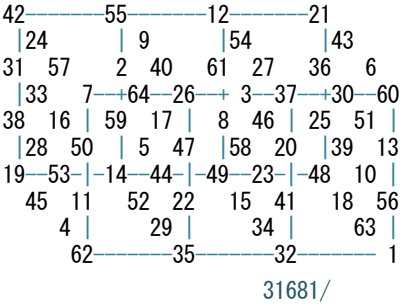


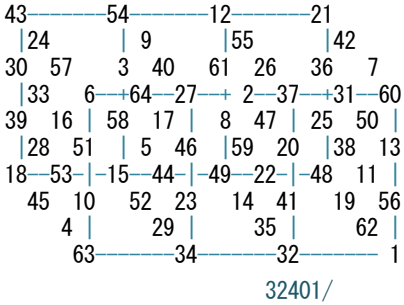
28801/



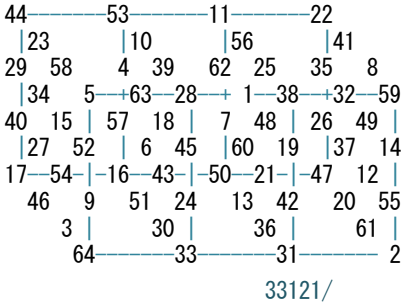
29521/



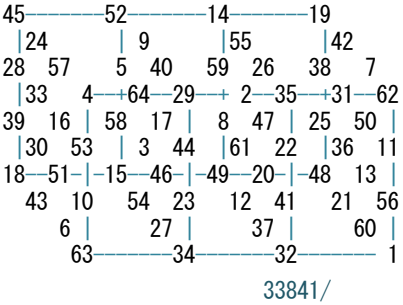
30241/



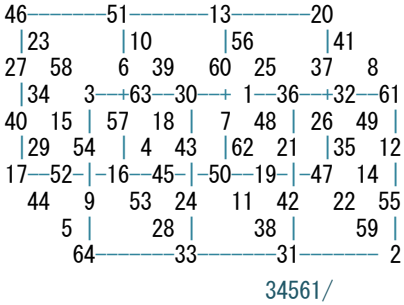
30961/



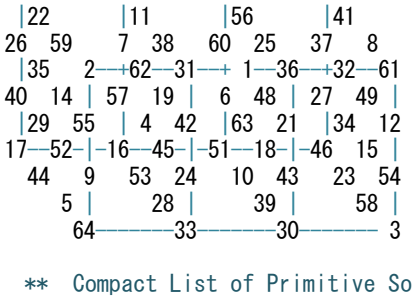
31681/



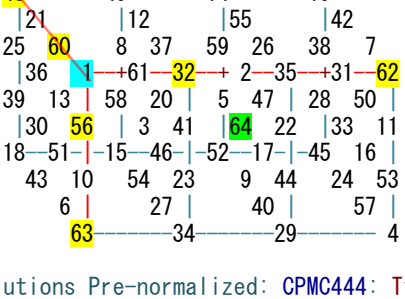
32401/



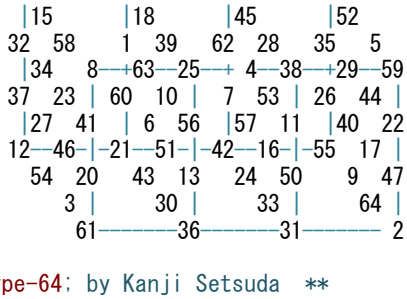
33121/



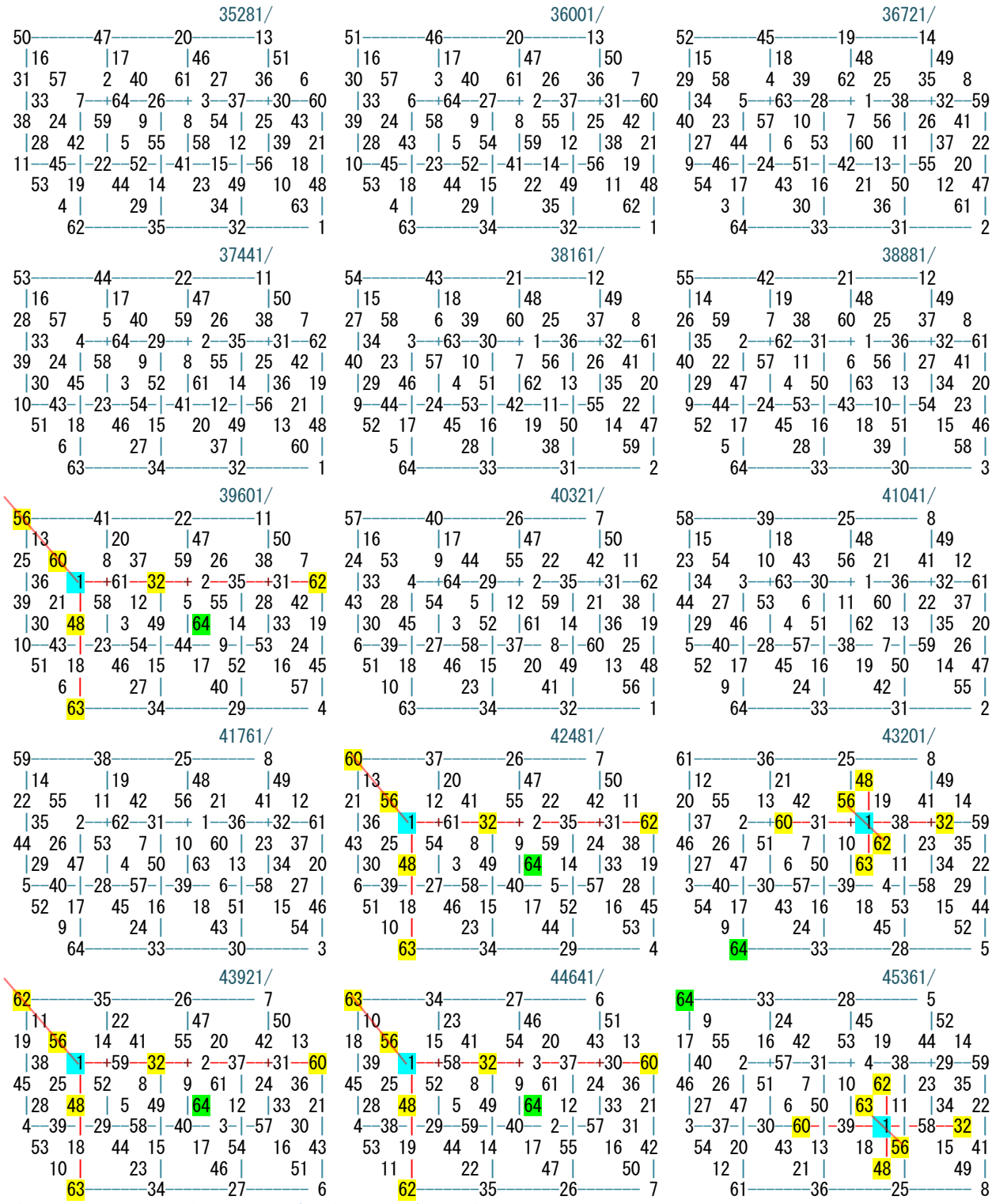
33841/



34561/



** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-64: by Kanji Setsuda **



[Solution Counts(when n1=1/All) = 720/46080]

[Solution Counts according to the Positions of Value 1]

1:	720,	2:	720,	3:	720,	4:	720,	5:	720,	6:	720,	7:	720,	8:	720,
9:	720,	10:	720,	11:	720,	12:	720,	13:	720,	14:	720,	15:	720,	16:	720,
17:	720,	18:	720,	19:	720,	20:	720,	21:	720,	22:	720,	23:	720,	24:	720,
25:	720,	26:	720,	27:	720,	28:	720,	29:	720,	30:	720,	31:	720,	32:	720,
33:	720,	34:	720,	35:	720,	36:	720,	37:	720,	38:	720,	39:	720,	40:	720,
41:	720,	42:	720,	43:	720,	44:	720,	45:	720,	46:	720,	47:	720,	48:	720,
49:	720,	50:	720,	51:	720,	52:	720,	53:	720,	54:	720,	55:	720,	56:	720,
57:	720,	58:	720,	59:	720,	60:	720,	61:	720,	62:	720,	63:	720,	64:	720

OK!

** Calculated and Listed by Kanji Setsuda on July 20, 2015 with MacOSX 10.10.4 & Xcode 6.4 **

以上が，正方連結汎立体四方陣の原始解の抜粋リストである。
７つの型別に簡略なリストを作ってみた。何せ原始解は，全部で46080×７＝32万2560個もある。大幅な抜粋を施さないと，限られた紙数の中で全貌を示せない。荒い抜粋になってしまったが，どうか寛容に御堪忍頂きたい。
それでも，普段は余りお目にかかれないリストを示せたことを少しは誇らしく思う。正直喜んでいる。そして，目的方陣の全貌を少しは御理解頂けたかと，期待申し上げている。

このリストをプリントしたプログラムを文末に掲載するが，やはり作成には特別の工夫が必要だった。興味のある方は，私の工夫をぜひ読み解いてみていただきたい。

４．正方連結汎立体四方陣の７つの型の解集合の特徴

こうして７つの型を並べてみると，共通の特徴がどうしても先に目につく。
(1) 各型共に原始解の総数は，46080個。n1の値別に数えても，720×64＝46080個。
(2) どの解の中でも，数値１を取り巻いて三次元的に隣接する６数と例の「汎対称点」にある１数の内容が {32，48，56，60，62，63，64} の７数に限られる。
(3) 数値１の**汎対称点**に，例えば32が現れると，その型の解の中では，他の６数 {48，56，60，62，63，64}が，１の周囲を取り巻いて三次元的に隣接する。例外が無い。
48型の場合は，他の６数{32，56，60，62，63，64}が，数値１に隣接する。
56型の場合は，他の６数{32，48，60，62，63，64}が，数値１に隣接する。
・・・・・
これらの特徴は，構造的に見て，正方連結汎立体四方陣に固有ものだ。特記すべきものと考えられる。特に珍重してよい特長の一つである，と言うべきであろう。

ところで，46080個というのは，**六次元超立体二方陣**を三次元に展開して得られる「基本図」の総数と同じである。何か関係があるのであろうか？
後日，この基本図 46080個を「原初方陣」と見立て，適当な「ひな形」を選んで変換して見たところ，64型の「正方連結**完全**立体四方陣」に限って，全数を再現・再構成した。
64型の「正方連結**完全**立体四方陣」が，くだんの**六次元超立体二方陣**の「申し子」であることが実際に確かめられた。
しかし，他の 32，48，56，60，62，63型の正方連結**汎**立体四方陣の場合は，どんなひな形を選んでやっても，その型の全数 46080個を直接に再現・再構成することができなかった。他の型がいかんせん紛れ込んでしまう結果になる。
その型のみを再構成するには、別の変換法を考えてやらなければならなかった。
これらの６型は，**六次元超立体二方陣**の直系の「子」というよりは，「孫世代」に属するという印象を受けた。
この辺の仕組みについては，更なる研究が待たれる。

Written on July 30, 2015 by 摂田 寛二(Kanji Setsuda);
Calculated and Listed with MacOSX 10.10.4 and Xcode 6.4)
E-mail: jag12001@nifty.com

[PROGRAM LIST]

```
//** 7 Types of 'Composite & Pan-triagonal' Magic Cubes 4x4x4: **
//**  Compact List of Primitive Solutions Pre-normalized  **
//** File: 'CPMC4P7T.c' Dictated by Kanji Setsuda  **
//**  in 2007,  2012 and Rivised on Dec.30, 2014; Recompiled  **
//**  on July 20, 2015 with MacOSX 10.10.4 and Xcode 6.4  **
//
#include <stdio.h>
//
// Global Var.
```

```
long int cnt, cnt1, cnt2;
long cntr[7];
short cnt3;
short tp, mstr=1;
short CC, SSM, LSM;
short CSM1, CSM2;
short nm[65], uflg[65];
short tn[7][65];
short cnt01[65], cnt43[65];
//
short cp43[7][2]={{33, 97}, {49, 81}, {57, 73},
  {61, 69}, {63, 67}, {64, 66}, {65, 65}};   //for Type-32, 48, 56, 60, 62, 63, 64
//
// Functions(Sub-Routines)
void stp01(void), stp02(void), stp03(void), stp04(void);
void stp05(void), stp06(void), stp07(void), stp08(void);
void stp09(void), stp10(void), stp11(void), stp12(void);
void stp13(void), stp14(void), stp15(void), stp16(void);
void stp17(void), stp18(void), stp19(void), stp20(void);
void stp21(void), stp22(void), stp23(void), stp24(void);
void stp25(void), stp26(void), stp27(void), stp28(void);
void stp29(void), stp30(void), stp31(void), stp32(void);
void stp33(void), stp34(void), stp35(void);
void ansprint(void);
void fnd01(void);
void prans(short x);
void prcnt01(void);
//
//* Main Program *
int main(){
 short m,n;
  printf("\n");
  printf("*** 7 Types of 'Composite & Pan-triagonal' Magic Cubes of Order 4 ***\n");
  for(m=0;m<7;m++){tp=m;
    printf("** Compact List of Primitive Solutions Pre-normalized: CPMC444: Type-%d; **\n",cp43[tp][0]-1);
    CC=65; SSM=130; LSM=130; cnt=0; cnt3=0;
    for(n=1;n<65;n++){nm[n]=0; uflg[n]=0; cnt01[n]=0; cnt43[n]=0;};
    stp01();                    // Begin the Calculations
    if(cnt3>0){prans(cnt3);}
    printf(" [Solution Counts(when n1=1/All) = %ld/%ld]\n",cnt1,cnt);
    printf("\n");
    printf(" [Solution Counts according to the Positions of Value 1]\n");
    prcnt01();
    printf(" OK!\n");
    printf("\n");
  }
  printf("** Calculated and Listed by Kanji Setsuda on\n");
  printf("    July 20, 2015 with MacOSX 10.10.4 & Xcode 6.4 **\n");
  printf("\n");
 return 0;
}
//
//* Begin the Calculations *
//* Define Level #1: *
//Set n1 & n43
void stp01(){
 short a,b,c;
  for(a=1;a<65;a++){
    if(tp<6){
      for(c=0;c<2;c++){CSM1=cp43[tp][c]; CSM2=cp43[tp][1-c]; b=CSM1-a;
        if((0<b)&&(b<65)&&(a!=b)){
          if((uflg[a]==0)&&(uflg[b]==0)){cnt2=0;
            nm[1]=a; nm[43]=b;
            uflg[a]=1; uflg[b]=1;
```

```
            stp02();
            uflg[b]=0; uflg[a]=0;}}}
    }
    else{CSM1=cp43[tp][0]; CSM2=cp43[tp][1]; b=CSM1-a;
      if((0<b)&&(b<65)&&(a!=b)){
        if((uflg[a]==0)&&(uflg[b]==0)){cnt2=0;
          nm[1]=a; nm[43]=b;
          uflg[a]=1; uflg[b]=1;
          stp02();
          uflg[b]=0; uflg[a]=0;}}
    }
  }
}
//Set n2 & n44
void stp02(){
 short a,b;
  for(a=64;a>0;a--){b=CSM2-a;
    if((0<b)&&(b<65)&&(a!=b)){
      if((uflg[a]==0)&&(uflg[b]==0)){if(nm[1]==1){cnt2=0;}
        nm[2]=a; nm[44]=b;
        uflg[a]=1; uflg[b]=1;
        stp03();
        uflg[b]=0; uflg[a]=0;}}
  }
}
//Set n5 & n47
void stp03(){
 short a,b;
  for(a=64;a>0;a--){b=CSM2-a;
    if((0<b)&&(b<65)&&(a!=b)){
      if((uflg[a]==0)&&(uflg[b]==0)){//if(nm[1]==1){cnt2=0;}
        nm[5]=a; nm[47]=b;
        uflg[a]=1; uflg[b]=1;
        stp04();
        uflg[b]=0; uflg[a]=0;}}
  }
}
//Set n6=SSM-n1-n2-n5 & n48
void stp04(){
 short a,b;
  a=SSM-nm[1]-nm[2]-nm[5];
  b=SSM-nm[43]-nm[44]-nm[47];
  if((0<a)&&(a<65)){
    if((0<b)&&(b<65)&&(a!=b)&&(a+b==CSM1)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[6]=a; nm[48]=b;
        uflg[a]=1; uflg[b]=1;
        stp05();
        uflg[b]=0; uflg[a]=0;}}}
}
//Set n17 & n59
void stp05(){
 short a,b;
  for(a=64;a>0;a--){b=CSM2-a;
    if((0<b)&&(b<65)&&(a!=b)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[17]=a; nm[59]=b;
        uflg[a]=1; uflg[b]=1;
        stp06();
        uflg[b]=0; uflg[a]=0;}}
  }
}
//Set n18=SSM-n1-n2-n17 & n60
void stp06(){
```

```
 short a,b;
  a=SSM-nm[1]-nm[2]-nm[17];
  b=SSM-nm[43]-nm[44]-nm[59];
  if((0<a)&&(a<65)){
    if((0<b)&&(b<65)&&(a!=b)&&(a+b==CSM1)){//if(nm[1]==1){cnt2=0;}
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[18]=a; nm[60]=b;
        uflg[a]=1; uflg[b]=1;
        stp07();
        uflg[b]=0; uflg[a]=0;}}}
}
//Set n21=SSM-n1-n5-n17 & n63
void stp07(){
 short a,b;
  a=SSM-nm[1]-nm[5]-nm[17];
  b=SSM-nm[43]-nm[47]-nm[59];
  if((0<a)&&(a<65)){
    if((0<b)&&(b<65)&&(a!=b)&&(a+b==CSM1)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[21]=a; nm[63]=b;
        uflg[a]=1; uflg[b]=1;
        stp08();
        uflg[b]=0; uflg[a]=0;}}}
}
//Set n22=SSM-n2-n6-n18 & n64
void stp08(){
 short a,b,c,e,f,g;
  a=SSM-nm[2]-nm[6]-nm[18];
  b=SSM-nm[5]-nm[6]-nm[21];
  c=SSM-nm[17]-nm[18]-nm[21];
  e=SSM-nm[44]-nm[48]-nm[60];
  f=SSM-nm[47]-nm[48]-nm[63];
  g=SSM-nm[59]-nm[60]-nm[63];
  if((0<a)&&(a<65)&&(a==b)&&(a==c)){
    if((0<e)&&(e<65)&&(e==f)&&(e==g)){
      if((a!=e)&&(a+e==CSM2)){
        if((uflg[a]==0)&&(uflg[e]==0)){
          nm[22]=a; nm[64]=e;
          uflg[a]=1; uflg[e]=1;
          stp09();
          uflg[e]=0; uflg[a]=0;}}}}
}
//* Level #2: *
//Set n4 & n42
void stp09(){
 short a,b;
  for(a=64;a>0;a--){b=CSM2-a;
    if((0<b)&&(b<65)&&(a!=b)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[4]=a; nm[42]=b;
        uflg[a]=1; uflg[b]=1;
        stp10();
        uflg[b]=0; uflg[a]=0;}}
  }
}
//Set n3=LSM-n1-n2-n4 & n41
void stp10(){
 short a,b;
  a=LSM-nm[1]-nm[2]-nm[4];
  b=LSM-nm[43]-nm[44]-nm[42];
  if((0<a)&&(a<65)){
    if((0<b)&&(b<65)&&(a!=b)&&(a+b==CSM1)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[3]=a; nm[41]=b;
```

```
          uflg[a]=1; uflg[b]=1;
          stp11();
          uflg[b]=0; uflg[a]=0;}}}
}
//Set n7=SSM-n2-n3-n6 & n45
void stp11(){
 short a,b;
  a=SSM-nm[2]-nm[3]-nm[6];
  b=SSM-nm[44]-nm[41]-nm[48];
  if((0<a)&&(a<65)){
    if((0<b)&&(b<65)&&(a!=b)&&(a+b==CSM2)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[7]=a; nm[45]=b;
        uflg[a]=1; uflg[b]=1;
        stp12();
        uflg[b]=0; uflg[a]=0;}}}
}
//Set n8=SSM-n3-n4-n7 & n46
void stp12(){
 short a,b,c,d;
  a=SSM-nm[3]-nm[4]-nm[7];
  b=SSM-nm[1]-nm[4]-nm[5];
  c=SSM-nm[41]-nm[42]-nm[45];
  d=SSM-nm[43]-nm[42]-nm[47];
  if((0<a)&&(a<65)&&(a==b)&&(c==d)){
    if((0<c)&&(c<65)&&(a!=c)&&(a+c==CSM1)){
      if((uflg[a]==0)&&(uflg[c]==0)){
        nm[8]=a; nm[46]=c;
        uflg[a]=1; uflg[c]=1;
        stp13();
        uflg[c]=0; uflg[a]=0;}}}
}
//Set n19=SSM-n2-n3-n18 & n57
void stp13(){
 short a,b;
  a=SSM-nm[2]-nm[3]-nm[18];
  b=SSM-nm[44]-nm[41]-nm[60];
  if((0<a)&&(a<65)){
    if((0<b)&&(b<65)&&(a!=b)&&(a+b==CSM2)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[19]=a; nm[57]=b;
        uflg[a]=1; uflg[b]=1;
        stp14();
        uflg[b]=0; uflg[a]=0;}}}
}
//Set n20=SSM-n3-n4-n19 & n58
void stp14(){
 short a,b,c,d;
  a=SSM-nm[3]-nm[4]-nm[19];
  b=SSM-nm[4]-nm[1]-nm[17];
  c=SSM-nm[41]-nm[42]-nm[57];
  d=SSM-nm[42]-nm[43]-nm[59];
  if((0<a)&&(a<65)&&(a==b)&&(c==d)){
    if((0<c)&&(c<65)&&(a!=c)&&(a+c==CSM1)){
      if((uflg[a]==0)&&(uflg[c]==0)){
        nm[20]=a; nm[58]=c;
        uflg[a]=1; uflg[c]=1;
        stp15();
        uflg[c]=0; uflg[a]=0;}}}
}
//Set n23=SSM-n3-n7-n19 & n61
void stp15(){
 short a,b,c,e,f,g;
  a=SSM-nm[3]-nm[7]-nm[19];
```

```
   b=SSM-nm[6]-nm[7]-nm[22];
   c=SSM-nm[18]-nm[19]-nm[22];
   e=SSM-nm[41]-nm[45]-nm[57];
   f=SSM-nm[48]-nm[45]-nm[64];
   g=SSM-nm[60]-nm[64]-nm[57];
   if((0<a)&&(a<65)&&(a==b)&&(a==c)){
     if((0<e)&&(e<65)&&(e==f)&&(e==g)){
       if((a!=e)&&(a+e==CSM1)){
         if((uflg[a]==0)&&(uflg[e]==0)){
           nm[23]=a; nm[61]=e;
           uflg[a]=1; uflg[e]=1;
           stp16();
           uflg[e]=0; uflg[a]=0;}}}}
}
//Set n24=SSM-n4-n8-n20 & n62
void stp16(){
 short a,b,c,d,e,f,g,h;
   a=SSM-nm[4]-nm[8]-nm[20];
   b=SSM-nm[7]-nm[8]-nm[23];
   c=SSM-nm[19]-nm[20]-nm[23];
   d=SSM-nm[20]-nm[17]-nm[21];
   e=SSM-nm[42]-nm[46]-nm[58];
   f=SSM-nm[45]-nm[46]-nm[61];
   g=SSM-nm[57]-nm[58]-nm[61];
   h=SSM-nm[46]-nm[47]-nm[63];
   if((0<a)&&(a<65)&&(a==b)&&(a==c)&&(a==d)){
     if((0<e)&&(e<65)&&(e==f)&&(e==g)&&(e==h)){
       if((a!=e)&&(a+e==CSM2)){
         if((uflg[a]==0)&&(uflg[e]==0)){
           nm[24]=a; nm[62]=e;
           uflg[a]=1; uflg[e]=1;
           stp17();
           uflg[e]=0; uflg[a]=0;}}}}
}
//* Level #3: *
//Set n13 & n39
void stp17(){
 short a,b;
   for(a=64;a>0;a--){b=CSM2-a;
     if((0<b)&&(b<65)&&(a!=b)){
       if((uflg[a]==0)&&(uflg[b]==0)){
         nm[13]=a; nm[39]=b;
         uflg[a]=1; uflg[b]=1;
         stp18();
         uflg[b]=0; uflg[a]=0;}}
   }
}
//Set n9=LSM-n1-n5-n13 & n35
void stp18(){
 short a,b,c,d;
   a=SSM-nm[1]-nm[5]-nm[13];
   b=SSM-nm[13]-nm[57]-nm[61];
   c=SSM-nm[43]-nm[47]-nm[39];
   d=SSM-nm[19]-nm[23]-nm[39];
   if((0<a)&&(a<65)&&(a==b)&&(c==d)){
     if((0<c)&&(c<65)&&(a!=c)&&(a+c==CSM1)){
       if((uflg[a]==0)&&(uflg[c]==0)){
         nm[9]=a; nm[35]=c;
         uflg[a]=1; uflg[c]=1;
         stp19();
         uflg[c]=0; uflg[a]=0;}}}
}
//Set n10=SSM-n5-n6-n9 & n36
void stp19(){
```

```
 short a,b;
  a=SSM-nm[5]-nm[6]-nm[9];
  b=SSM-nm[47]-nm[48]-nm[35];
  if((0<a)&&(a<65)){
    if((0<b)&&(b<65)&&(a!=b)&&(a+b==CSM2)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[10]=a; nm[36]=b;
        uflg[a]=1; uflg[b]=1;
        stp20();
        uflg[b]=0; uflg[a]=0;}}}
}
//Set n11=SSM-n6-n7-n10 & n33
void stp20(){
 short a,b;
  a=SSM-nm[6]-nm[7]-nm[10];
  b=SSM-nm[48]-nm[45]-nm[36];
  if((0<a)&&(a<65)){
    if((0<b)&&(b<65)&&(a!=b)&&(a+b==CSM1)){
      if((uflg[a]==0)&&(uflg[b]==0)){
        nm[11]=a; nm[33]=b;
        uflg[a]=1; uflg[b]=1;
        stp21();
        uflg[b]=0; uflg[a]=0;}}}
}
//Set n12=SSM-n7-n8-n11 & n34
void stp21(){
 short a,b,c,d;
  a=SSM-nm[7]-nm[8]-nm[11];
  b=SSM-nm[8]-nm[5]-nm[9];
  c=SSM-nm[45]-nm[46]-nm[33];
  d=SSM-nm[46]-nm[47]-nm[35];
  if((0<a)&&(a<65)&&(a==b)&&(c==d)){
    if((0<c)&&(c<65)&&(a!=c)&&(a+c==CSM2)){
      if((uflg[a]==0)&&(uflg[c]==0)){
        nm[12]=a; nm[34]=c;
        uflg[a]=1; uflg[c]=1;
        stp22();
        uflg[c]=0; uflg[a]=0;}}}
}
//Set n14=SSM-n9-n10-n13 & n40
void stp22(){
 short a,b,c,d;
  a=SSM-nm[9]-nm[10]-nm[13];
  b=SSM-nm[1]-nm[2]-nm[13];
  c=SSM-nm[35]-nm[36]-nm[39];
  d=SSM-nm[43]-nm[44]-nm[39];
  if((0<a)&&(a<65)&&(a==b)&&(c==d)){
    if((0<c)&&(c<65)&&(a!=c)&&(a+c==CSM1)){
      if((uflg[a]==0)&&(uflg[c]==0)){
        nm[14]=a; nm[40]=c;
        uflg[a]=1; uflg[c]=1;
        stp23();
        uflg[c]=0; uflg[a]=0;}}}
}
//Set n15=SSM-n10-n11-n14 & n37
void stp23(){
 short a,b,c,d;
  a=SSM-nm[10]-nm[11]-nm[14];
  b=SSM-nm[2]-nm[3]-nm[14];
  c=SSM-nm[36]-nm[33]-nm[40];
  d=SSM-nm[44]-nm[41]-nm[40];
  if((0<a)&&(a<65)&&(a==b)&&(c==d)){
    if((0<c)&&(c<65)&&(a!=c)&&(a+c==CSM2)){
      if((uflg[a]==0)&&(uflg[c]==0)){
```

```
          nm[15]=a; nm[37]=c;
          uflg[a]=1; uflg[c]=1;
          stp24();
          uflg[c]=0; uflg[a]=0;}}}
}
//Set n16=SSM-n11-n12-n15 &38
void stp24(){
 short a,b,c,d;
   a=SSM-nm[11]-nm[12]-nm[15];
   b=SSM-nm[3]-nm[4]-nm[15];
   c=SSM-nm[33]-nm[34]-nm[37];
   d=SSM-nm[41]-nm[42]-nm[37];
   if((0<a)&&(a<65)&&(a==b)&&(c==d)){
     if((0<c)&&(c<65)&&(a!=c)&&(a+c==CSM1)){
       if((uflg[a]==0)&&(uflg[c]==0)){
          nm[16]=a; nm[38]=c;
          uflg[a]=1; uflg[c]=1;
          stp25();
          uflg[c]=0; uflg[a]=0;}}}
}
//Check n12+n16+n9+n13?=SSM
void stp25(){
 short sm1,sm2,sm3,sm4;
   sm1=nm[12]+nm[9]+nm[16]+nm[13];
   sm2=nm[16]+nm[13]+nm[4]+nm[1];
   sm3=nm[34]+nm[35]+nm[38]+nm[39];
   sm4=nm[38]+nm[39]+nm[42]+nm[43];
   if((sm1==SSM)&&(sm2==SSM)&&(sm3==SSM)&&(sm4==SSM)){stp26();}
}
//* Level #4: *
//Set n25=SSM-n5-n9-n21 & n51
void stp26(){
 short a,b,c,d;
   a=SSM-nm[5]-nm[9]-nm[21];
   b=SSM-nm[21]-nm[37]-nm[41];
   c=SSM-nm[47]-nm[35]-nm[63];
   d=SSM-nm[63]-nm[15]-nm[3];
   if((0<a)&&(a<65)&&(a==b)&&(c==d)){
     if((0<c)&&(c<65)&&(a!=c)&&(a+c==CSM2)){
       if((uflg[a]==0)&&(uflg[c]==0)){
          nm[25]=a; nm[51]=c;
          uflg[a]=1; uflg[c]=1;
          stp27();
          uflg[c]=0; uflg[a]=0;}}}
}
//Set n26=SSM-n6-n10-n22 & n52
void stp27(){
 short a,b,c,d,e,f,g,h;
   a=SSM-nm[6]-nm[10]-nm[22];
   b=SSM-nm[9]-nm[10]-nm[25];
   c=SSM-nm[21]-nm[22]-nm[25];
   d=SSM-nm[25]-nm[41]-nm[42];
   e=SSM-nm[48]-nm[36]-nm[64];
   f=SSM-nm[35]-nm[36]-nm[51];
   g=SSM-nm[63]-nm[64]-nm[51];
   h=SSM-nm[64]-nm[16]-nm[4];
   if((0<a)&&(a<65)&&(a==b)&&(a==c)&&(a==d)){
     if((0<e)&&(e<65)&&(e==f)&&(e==g)&&(e==h)){
       if((a!=e)&&(a+e==CSM1)){
          if((uflg[a]==0)&&(uflg[e]==0)){
            nm[26]=a; nm[52]=e;
            uflg[a]=1; uflg[e]=1;
            stp28();
            uflg[e]=0; uflg[a]=0;}}}}
```

```
}
//Set n27=SSM-n7-n11-n23 & n49
void stp28(){
 short a,b,c,d,e,f,g,h;
  a=SSM-nm[7]-nm[11]-nm[23];
  b=SSM-nm[10]-nm[11]-nm[26];
  c=SSM-nm[22]-nm[23]-nm[26];
  d=LSM-nm[11]-nm[43]-nm[59];
  e=SSM-nm[45]-nm[33]-nm[61];
  f=SSM-nm[36]-nm[33]-nm[52];
  g=SSM-nm[64]-nm[61]-nm[52];
  h=LSM-nm[1]-nm[17]-nm[33];
  if((0<a)&&(a<65)&&(a==b)&&(a==c)&&(a==d)){
    if((0<e)&&(e<65)&&(e==f)&&(e==g)&&(e==h)){
      if((a!=e)&&(a+e==CSM2)){
        if((uflg[a]==0)&&(uflg[e]==0)){
          nm[27]=a; nm[49]=e;
          uflg[a]=1; uflg[e]=1;
          stp29();
          uflg[e]=0; uflg[a]=0;}}}}
}
//Set n28=SSM-n8-n12-n24 & n50
void stp29(){
 short a,b,c,d,e,f,g,h;
  a=SSM-nm[8]-nm[12]-nm[24];
  b=SSM-nm[11]-nm[12]-nm[27];
  c=SSM-nm[23]-nm[24]-nm[27];
  d=SSM-nm[27]-nm[43]-nm[44];
  e=SSM-nm[46]-nm[34]-nm[62];
  f=SSM-nm[33]-nm[34]-nm[49];
  g=SSM-nm[61]-nm[62]-nm[49];
  h=SSM-nm[62]-nm[14]-nm[2];
  if((0<a)&&(a<65)&&(a==b)&&(a==c)&&(a==d)){
    if((0<e)&&(e<65)&&(e==f)&&(e==g)&&(e==h)){
      if((a!=e)&&(a+e==CSM1)){
        if((uflg[a]==0)&&(uflg[e]==0)){
          nm[28]=a; nm[50]=e;
          uflg[a]=1; uflg[e]=1;
          stp30();
          uflg[e]=0; uflg[a]=0;}}}}
}
//Set n29=SSM-n9-n13-n25 & n55
void stp30(){
 short a,b,c,d,e,f,g,h;
  a=SSM-nm[9]-nm[13]-nm[25];
  b=SSM-nm[25]-nm[41]-nm[45];
  c=SSM-nm[13]-nm[1]-nm[17];
  d=SSM-nm[45]-nm[17]-nm[33];
  e=SSM-nm[35]-nm[39]-nm[51];
  f=SSM-nm[51]-nm[3]-nm[7];
  g=SSM-nm[39]-nm[43]-nm[59];
  h=SSM-nm[7]-nm[59]-nm[11];
  if((0<a)&&(a<65)&&(a==b)&&(a==c)&&(a==d)){
    if((0<e)&&(e<65)&&(e==f)&&(e==g)&&(e==h)){
      if((a!=e)&&(a+e==CSM1)){
        if((uflg[a]==0)&&(uflg[e]==0)){
          nm[29]=a; nm[55]=e;
          uflg[a]=1; uflg[e]=1;
          stp31();
          uflg[e]=0; uflg[a]=0;}}}}
}
//Set n30=SSM-n10-n14-n26 & n56
void stp31(){
 short a,b,c,d,e,f,g,h;
```

```
   a=SSM-nm[10]-nm[14]-nm[26];
   b=SSM-nm[13]-nm[14]-nm[29];
   c=SSM-nm[25]-nm[26]-nm[29];
   d=SSM-nm[26]-nm[42]-nm[46];
   e=SSM-nm[36]-nm[40]-nm[52];
   f=SSM-nm[39]-nm[40]-nm[55];
   g=SSM-nm[51]-nm[52]-nm[55];
   h=SSM-nm[55]-nm[59]-nm[60];
   if((0<a)&&(a<65)&&(a==b)&&(a==c)&&(a==d)){
     if((0<e)&&(e<65)&&(e==f)&&(e==g)&&(e==h)){
       if((a!=e)&&(a+e==CSM2)){
         if((uflg[a]==0)&&(uflg[e]==0)){
           nm[30]=a; nm[56]=e;
           uflg[a]=1; uflg[e]=1;
           stp32();
           uflg[e]=0; uflg[a]=0;}}}}
}
//Set n31=SSM-n11-n15-n27 & n53
void stp32(){
 short a,b,c,d,e,f,g,h;
   a=SSM-nm[11]-nm[15]-nm[27];
   b=SSM-nm[14]-nm[15]-nm[30];
   c=SSM-nm[26]-nm[27]-nm[30];
   d=SSM-nm[30]-nm[46]-nm[47];
   e=SSM-nm[33]-nm[37]-nm[49];
   f=SSM-nm[40]-nm[37]-nm[56];
   g=SSM-nm[52]-nm[49]-nm[56];
   h=SSM-nm[49]-nm[1]-nm[5];
   if((0<a)&&(a<65)&&(a==b)&&(a==c)&&(a==d)){
     if((0<e)&&(e<65)&&(e==f)&&(e==g)&&(e==h)){
       if((a!=e)&&(a+e==CSM1)){
         if((uflg[a]==0)&&(uflg[e]==0)){
           nm[31]=a; nm[53]=e;
           uflg[a]=1; uflg[e]=1;
           stp33();
           uflg[e]=0; uflg[a]=0;}}}}
}
//Set n32=SSM-n12-n16-n28 & n54
void stp33(){
 short a,b,c,d,e,f,g,h;
   a=SSM-nm[12]-nm[16]-nm[28];
   b=SSM-nm[15]-nm[16]-nm[31];
   c=SSM-nm[27]-nm[28]-nm[31];
   d=SSM-nm[28]-nm[44]-nm[48];
   e=SSM-nm[34]-nm[38]-nm[50];
   f=SSM-nm[37]-nm[38]-nm[53];
   g=SSM-nm[49]-nm[50]-nm[53];
   h=SSM-nm[53]-nm[5]-nm[6];
   if((0<a)&&(a<65)&&(a==b)&&(a==c)&&(a==d)){
     if((0<e)&&(e<65)&&(e==f)&&(e==g)&&(e==h)){
       if((a!=e)&&(a+e==CSM2)){
         if((uflg[a]==0)&&(uflg[e]==0)){
           nm[32]=a; nm[54]=e;
           uflg[a]=1; uflg[e]=1;
           stp34();
           uflg[e]=0; uflg[a]=0;}}}}
}
//Check Others
void stp34(){
 short sm1,sm2,sm3;
   sm1=nm[25]+nm[29]+nm[28]+nm[32];
   sm2=nm[13]+nm[29]+nm[16]+nm[32];
   sm3=nm[32]+nm[29]+nm[48]+nm[45];
   if((sm1==SSM)&&(sm2==SSM)&&(sm3==SSM)){stp35();}
```

```
}
//The Last Check of Line-Sums
void stp35(){
 short sm1,sm2,sm3;
  sm1=nm[20]+nm[24]+nm[28]+nm[32];
  sm2=nm[16]+nm[32]+nm[48]+nm[64];
  sm3=nm[29]+nm[30]+nm[31]+nm[32];
  if((sm1==LSM)&&(sm2==LSM)&&(sm3==LSM)){ansprint();}
}
//
//* Print the Answers *
void ansprint(){
 short m,n;
  cnt++; cnt2++;
  fnd01();
  if(nm[1]==1){cnt1=cnt; m=nm[43]; cnt43[m]++;}
  if(cnt2==1){
    cntr[cnt3]=cnt;
    for(n=1;n<65;n++){tn[cnt3][n]=nm[n];}
    cnt3++;
    if(cnt3==3){prans(cnt3); cnt3=0;}
  }
}
//
//* Print the Answers: Sub *
void prans(short x){
 short n;
  for(n=0;n<x;n++){printf("%29ld/",cntr[n]);
    if(n+1<x){printf("       ");}}
  printf("\n");
  for(n=0;n<x;n++){
    printf(" %2d-------%2d-------%2d-------%2d",tn[n][1],tn[n][2],tn[n][3],tn[n][4]);
    if(n+1<x){printf("       ");}}
  printf("\n");
  for(n=0;n<x;n++){
    printf("  |%2d      |%2d      |%2d      |%2d",tn[n][17],tn[n][18],tn[n][19],tn[n][20]);
    if(n+1<x){printf("     ");}}
  printf("\n");
  for(n=0;n<x;n++){
    printf(" %2d  %2d   %2d  %2d   %2d  %2d   %2d  %2d",
           tn[n][5],tn[n][33],tn[n][6],tn[n][34],tn[n][7],tn[n][35],tn[n][8],tn[n][36]);
    if(n+1<x){printf("   ");}}
  printf("\n");
  for(n=0;n<x;n++){
    printf("  |%2d  %2d--+%2d--%2d--+%2d--%2d--+%2d--%2d",
           tn[n][21],tn[n][49],tn[n][22],tn[n][50],tn[n][23],tn[n][51],tn[n][24],tn[n][52]);
    if(n+1<x){printf(" ");}}
  printf("\n");
  for(n=0;n<x;n++){
    printf(" %2d  %2d | %2d  %2d | %2d  %2d | %2d  %2d |",
           tn[n][9],tn[n][37],tn[n][10],tn[n][38],tn[n][11],tn[n][39],tn[n][12],tn[n][40]);
    if(n+1<x){printf(" ");}}
  printf("\n");
  for(n=0;n<x;n++){
    printf("  |%2d  %2d  |%2d  %2d  |%2d  %2d  |%2d  %2d",
           tn[n][25],tn[n][53],tn[n][26],tn[n][54],tn[n][27],tn[n][55],tn[n][28],tn[n][56]);
    if(n+1<x){printf(" ");}}
  printf("\n");
  for(n=0;n<x;n++){
    printf(" %2d--%2d-|-%2d--%2d-|-%2d--%2d-|-%2d  %2d |",
           tn[n][13],tn[n][41],tn[n][14],tn[n][42],tn[n][15],tn[n][43],tn[n][16],tn[n][44]);
    if(n+1<x){printf(" ");}}
  printf("\n");
  for(n=0;n<x;n++){
```

```
      printf("   %2d  %2d   %2d  %2d   %2d  %2d   %2d  %2d",
             tn[n][29],tn[n][57],tn[n][30],tn[n][58],tn[n][31],tn[n][59],tn[n][32],tn[n][60]);
      if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
      printf("     %2d |     %2d |     %2d |     %2d |",tn[n][45],tn[n][46],tn[n][47],tn[n][48]);
      if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
      printf("       %2d-------%2d-------%2d-------%2d",tn[n][61],tn[n][62],tn[n][63],tn[n][64]);
      if(n+1<x){printf(" ");}}
    printf("\n");
}
//
//* Find 1 and Count solutions with that position *
void fnd01(){
 short m;
   m=0;
   for(m=1;m<65;m++){
      if(nm[m]==1){cnt01[m]++;}
   }
}
//
//* Solution Counts according to the Positions of Value 1 *
void prcnt01(){
 short m,n;
   for(m=1;m<65;m++){n=cnt01[m];
      printf("%5d:%5d,",m,n);
      if((m%8)==0){printf("\n");}
   }
   printf("\n");
}
//
//(End_Of_File)
```