Episode – 2
28th February – 6th March 2025

Math & Neighbours
by
Puwar Dhruvarajsinh, Nityant Agarwal & Akash Doulani

Sudoku Mahabharat rounds will also serve as qualifiers for Indian Sudoku Championship for year 2025. Please check http://logicmastersindia.com/SM/2025sm.asp **for details.**

Important Links

Submission Page : http://logicmastersindia.com/live?contest=SM202502

Discussion Thread : http://logicmastersindia.com/t/?tid=4185

F. A. Q. : http://logicmastersindia.com/t/?tid=2773

Registration, if required : http://logicmastersindia.com/register.asp

About this Episode

This episode has 18 Sudokus with the following breakdown:

- 2* Classic Sudoku 6x6 and 4* Classic Sudoku 9x9
- 1 each of Killer Sudoku 6x6 and Killer Sudoku 9x9
- 1 each of Mathdoku 6x6 and Mathdoku 9x9
- 1 each of X-Sums Sudoku 6x6 and X-Sums Sudoku 9x9
- 1 each of The Greater Sudoku 6x6 and The Greater Sudoku 9x9
- 1 each of Kropki Pairs Sudoku 6x6 and Kropki Pairs Sudoku 9x9
- 1 each of Odd Even Count Sudoku 6x6 and Odd Even Count Sudoku 9x9

How to participate?

- Understand the rules of different variants that will appear in this episode. This Instruction Booklet has rules for each of them.
- Any time on or after 28th Feb (but on or before 6th Mar), login at the submission page using your LMI user-id and password. Please check the submission page for exact timing.
- **If you plan to solve on paper:**
  a) Download the password protected Puzzle booklet (will be uploaded before the test starts). The Puzzle booklet contains the actual Puzzles to be solved. It is password protected, so you won't be able to open it.
  b) Click on "Start". At this time, password for pdf will be shown and timer will start. **The contest duration is 90 minutes.**
  c) The puzzle booklet can be downloaded, printed and solved on paper.
  d) We advise you to have a printer accessible with enough paper.
  e) You are allowed to use writing implements, eraser, blank paper (including commercial graph paper), ruler, scissors, and tape.
- **If you plan to solve on LMI's Penpa-Integrated Interface:**
  a) Click on this link and understand the instructions - https://logicmastersindia.com/live/faq-online-solving.asp
  b) It is noted on the link too, but we note it here as well to be clear – the participants must still input the answer keys in the boxes below the puzzle and submit them to receive credit as given below.
- The Greater solving help of any kind is not permitted. This includes but is not limited to: assistance of any kind from any other person; prepared notes, books, calculators, computers, or tools other than items explicitly permitted.
- Participants may use both paper solving and online solving, even interchangeably. Eventually our system will only count anything submitted in the submission boxes in either mode.

If you are participating at LMI for first time, it will be useful to check the F.A.Q. at http://logicmastersindia.com/t/?tid=2773.

About answer keys and Submission

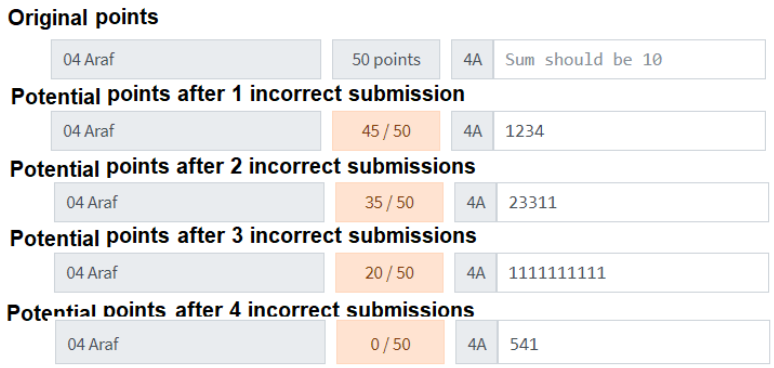
- After solving the puzzle, you need to submit the puzzle using the answer keys.
- You may submit the answer keys anytime during the test duration.
- Answer keys are always to be entered from left to right or top to bottom
- Don't enter any separator unless specified in the answer key
- If one row and one column is marked, enter the row first and then the column
- If multiple rows are marked, enter from top to bottom for marked rows
- If multiple columns are marked, enter from left to right for marked columns

Points Table and Scoring

Points typically indicate difficulty of the Puzzles and time required to solve them. You will get full points if you enter the correct answer key. While the organizers have made best efforts to match them, **your personal experience and preference may differ.**

Classic Sudoku 6x6	1, 1
Classic Sudoku 9x9	5, 7, 6, 4
Killer Sudoku 6x6 & 9x9	3, 7
Mathdoku 6x6 & 9x9	3, 10
X-Sums Sudoku 6x6 & 9x9	4, 10
The Greater Sudoku 6x6 & 9x9	2, 9
Kropki Pairs Sudoku 6x6 & 9x9	5, 10
Odd Even Count Sudoku 6x6 & 9x9	4, 9

This test uses instant grading where a solver can submit any individual Puzzle and receive confirmation that the solution is correct or not. Each incorrect submission reduces the puzzle's potential score. The first, second, third, and fourth incorrect submissions reduce the potential score to 90%, 70%, 40%, and 0% respectively. A demonstration for this is shown below.



Bonus and Ranking

If you submitted all Puzzles correctly, you can have bonus points 1 point per minute saved, computed up to seconds.

Ranking will be based on following rules in order:

1. Most total points
2. Earliest final submission time, up to seconds (ignoring incorrect submissions)

Credits

- **Botaku** and **Wessel Strijkstra** for test solving the puzzles and providing invaluable feedback.
- The original creator **opt-pan** for penpa edit - https://opt-pan.github.io/penpa-edit/
- **Swaroop Guggilam** for his recent efforts in adding features to Penpa-edit - https://swaroopg92.github.io/penpa-edit/ and also working to integrate it with our contest engine.

About the Puzzle Booklet

The password protected Puzzle booklet will have 10 pages. This is relevant only for paper solvers.

Solutions to examples are towards the end of the booklet in the Solutions section.

Rules Powered by Sudokuib - https://github.com/vopani/sudokuib

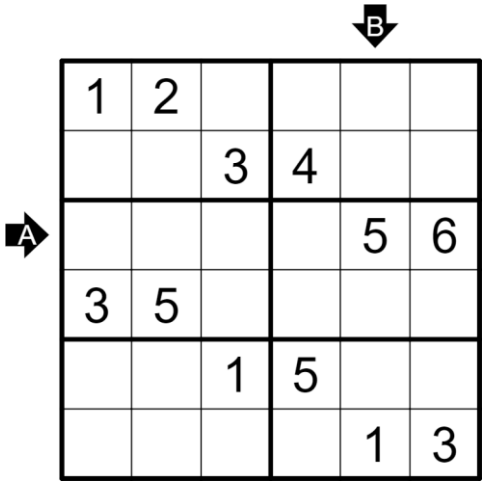
All answer keys are the same for all puzzles – enter the contents of the marked rows/columns, including given digits, along the direction of the arrow.

1-2 Classic Sudoku 6x6

1 + 1 points

Place a digit from 1 to 6 into each empty cell in the grid so that each digit appears exactly once in each row, column and 2x3 outlined box.

Penpa for example:
https://tinyurl.com/2nvezsrr

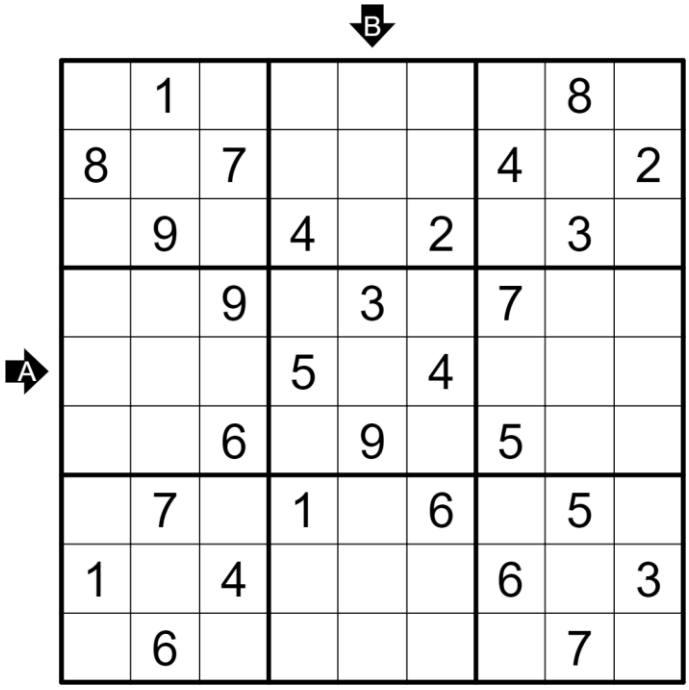


3-6 Classic Sudoku 9x9

5 + 7 + 6 + 4 points

Place a digit from 1 to 9 into each empty cell in the grid so that each digit appears exactly once in each row, column and 3x3 outlined box.

Penpa for example:
https://tinyurl.com/333ntt48



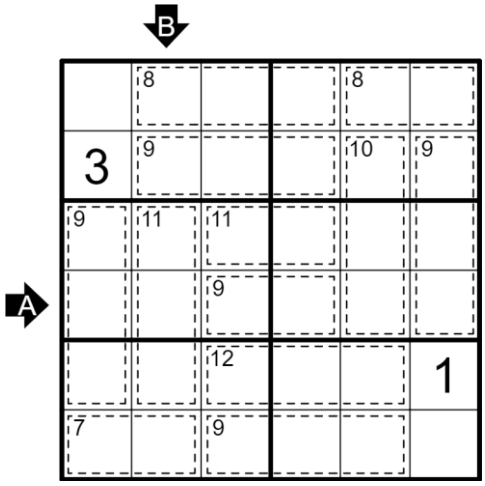
7 Killer Sudoku 6x6

3 points

Place a digit from 1 to 6 into each empty cell in the grid so that each digit appears exactly once in each row, column and 2x3 outlined box.

The number at the top-left corner of each cage is the sum of digits inside the cage. Digits do not repeat within a cage.

Penpa for example:
https://tinyurl.com/yxld64vj



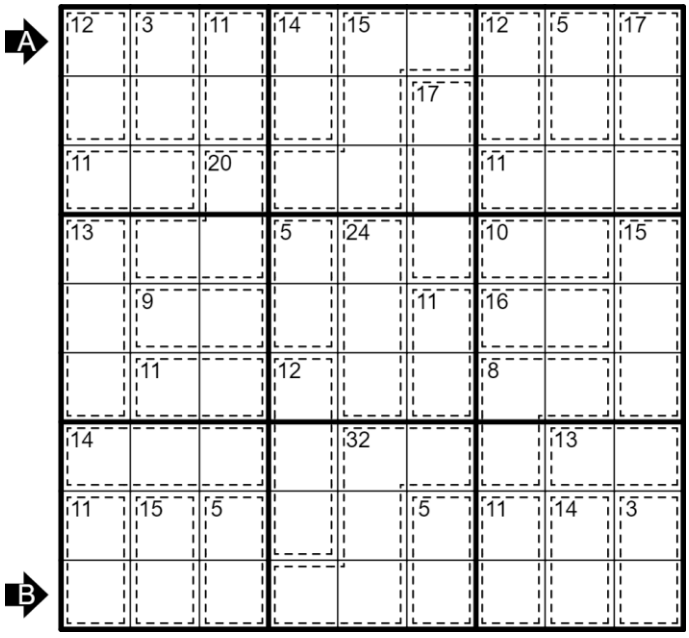
8 Killer Sudoku 9x9

7 points

Place a digit from 1 to 9 into each empty cell in the grid so that each digit appears exactly once in each row, column and 3x3 outlined box.

The number at the top-left corner of each cage is the sum of digits inside the cage. Digits do not repeat within a cage.

Penpa for example:
https://tinyurl.com/yylpz6wn



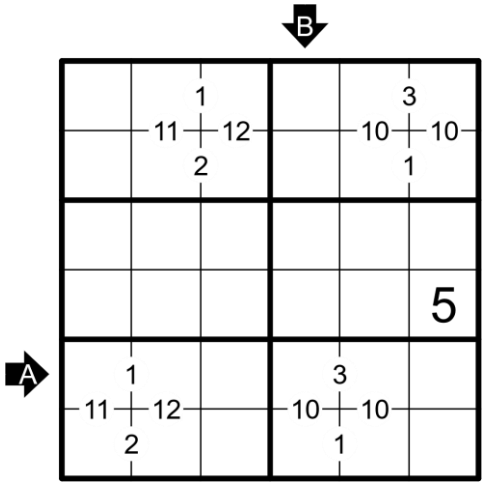
9 Mathdoku 6x6

3 points

Place a digit from 1 to 6 into each empty cell in the grid so that each digit appears exactly once in each row, column and 2x3 outlined box.

Some boxes contain four numbers between adjacent cells that are the result of a different mathematical operation (+, -, *, /) of the digits in those cells.

Penpa for example:
https://tinyurl.com/2cubjg5v



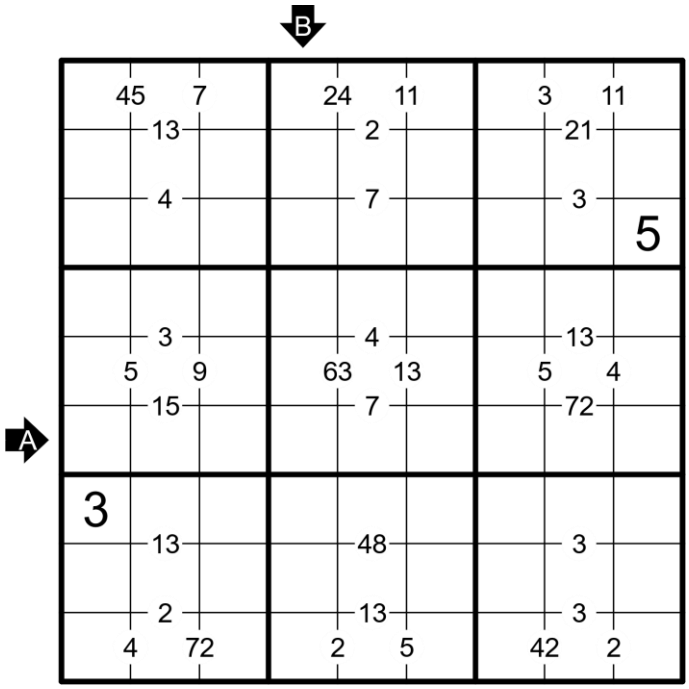
10 Mathdoku 9x9

10 points

Place a digit from 1 to 9 into each empty cell in the grid so that each digit appears exactly once in each row, column and 3x3 outlined box.

Some boxes contain four numbers between adjacent cells that are the result of a different mathematical operation (+, -, *, /) of the digits in those cells.

Penpa for example:
https://tinyurl.com/2bnhwouj



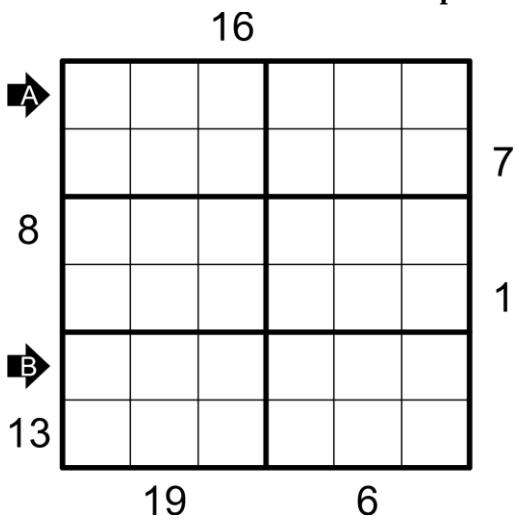
11 X-Sums Sudoku 6x6

4 points

Place a digit from 1 to 6 into each empty cell in the grid so that each digit appears exactly once in each row, column and 2x3 outlined box.

Each number outside the grid is the sum of the first 'X' numbers placed in the corresponding direction, where X is the first digit placed in that direction.

Penpa for example:
https://tinyurl.com/2c4mkhmr



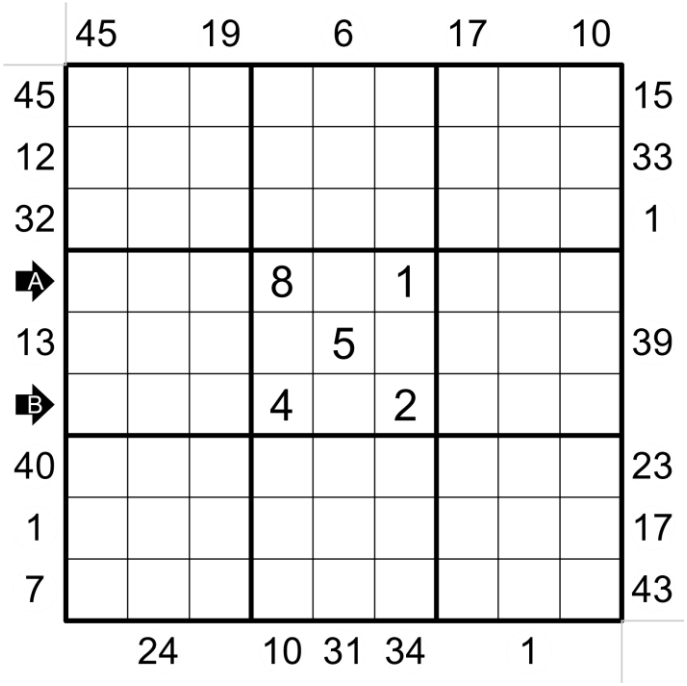
12 X-Sums Sudoku 9x9

10 points

Place a digit from 1 to 9 into each empty cell in the grid so that each digit appears exactly once in each row, column and 3x3 outlined box.

Each number outside the grid is the sum of the first 'X' numbers placed in the corresponding direction, where X is the first digit placed in that direction.

Penpa for example:
https://tinyurl.com/2aoy4mp6



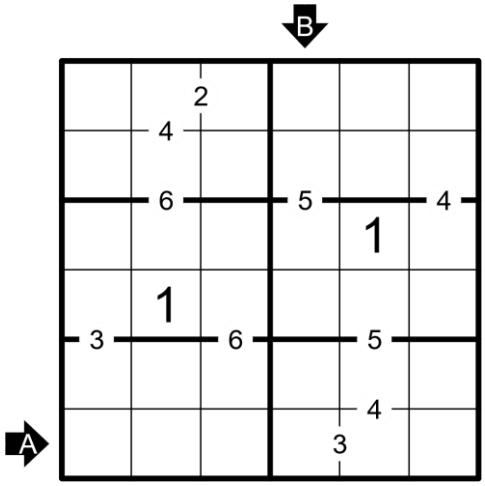
13 The Greater Sudoku 6x6

2 points

Place a digit from 1 to 6 into each empty cell in the grid so that each digit appears exactly once in each row, column and 2x3 outlined box.

Each digit between adjacent cells is the larger of the digits in those two cells.

Penpa for example:
https://tinyurl.com/275fflja



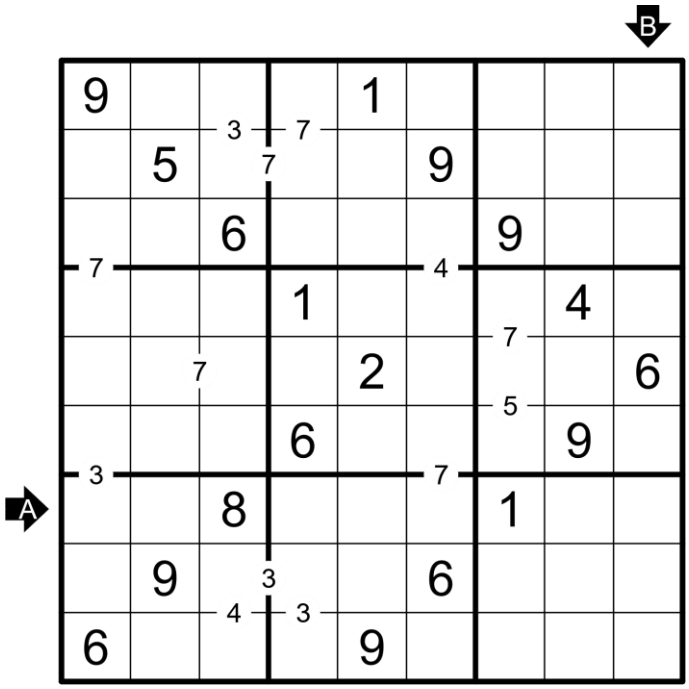
14 The Greater Sudoku 9x9

9 points

Place a digit from 1 to 9 into each empty cell in the grid so that each digit appears exactly once in each row, column and 3x3 outlined box.

Each digit between adjacent cells is the larger of the digits in those two cells.

Penpa for example:
https://tinyurl.com/23ohlb6a



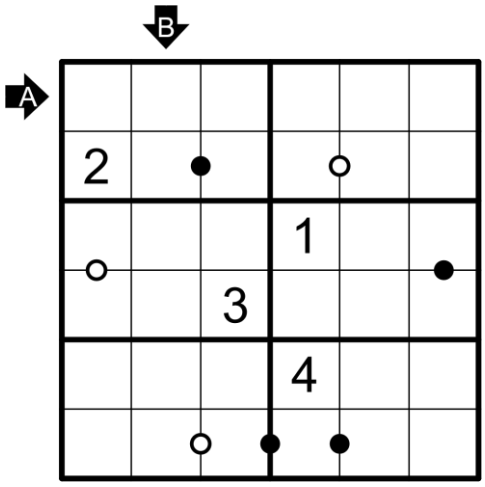
15 Kropki Pairs Sudoku 6x6

5 points

Place a digit from 1 to 6 into each empty cell in the grid so that each digit appears exactly once in each row, column and outlined region.

Adjacent cells marked with a white circle contain consecutive digits. Adjacent cells marked with a black circle contains digits where one digit is double of the other digit. The circle between 1 and 2 can be of either colour. NOT all possible circles are necessarily marked.

Penpa for example:
https://tinyurl.com/2a94azer



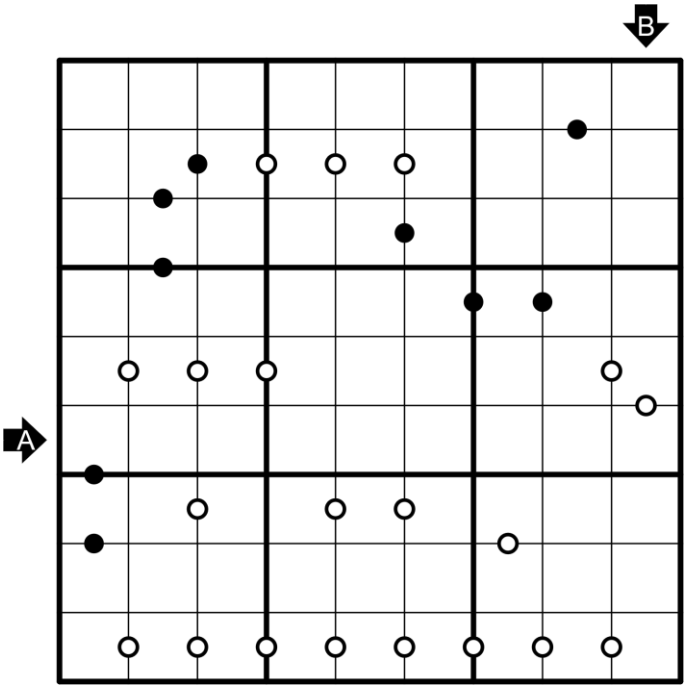
16 Kropki Pairs Sudoku 9x9

10 points

Place a digit from 1 to 9 into each empty cell in the grid so that each digit appears exactly once in each row, column and outlined region.

Adjacent cells marked with a white circle contain consecutive digits. Adjacent cells marked with a black circle contains digits where one digit is double of the other digit. The circle between 1 and 2 can be of either colour. NOT all possible circles are necessarily marked.

Penpa for example:
https://tinyurl.com/2ydlkqte



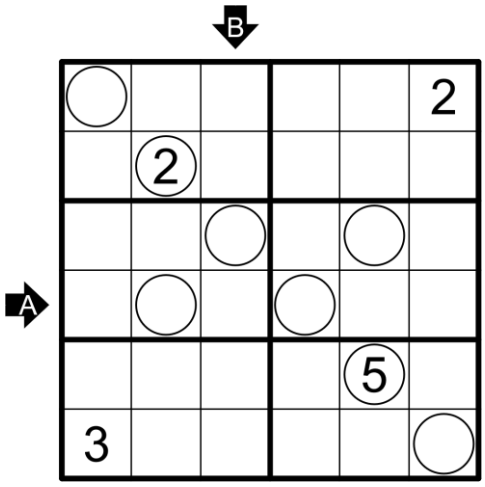
17 Odd Even Count Sudoku 6x6

4 points

Place a digit from 1 to 6 into each empty cell in the grid so that each digit appears exactly once in each row, column and 2x3 outlined box.

The digit in each circled cell is the number of digits in the 8 surrounding cells that have the same parity (odd/even) as that digit.

Penpa for example:
https://tinyurl.com/2j9ehhg6



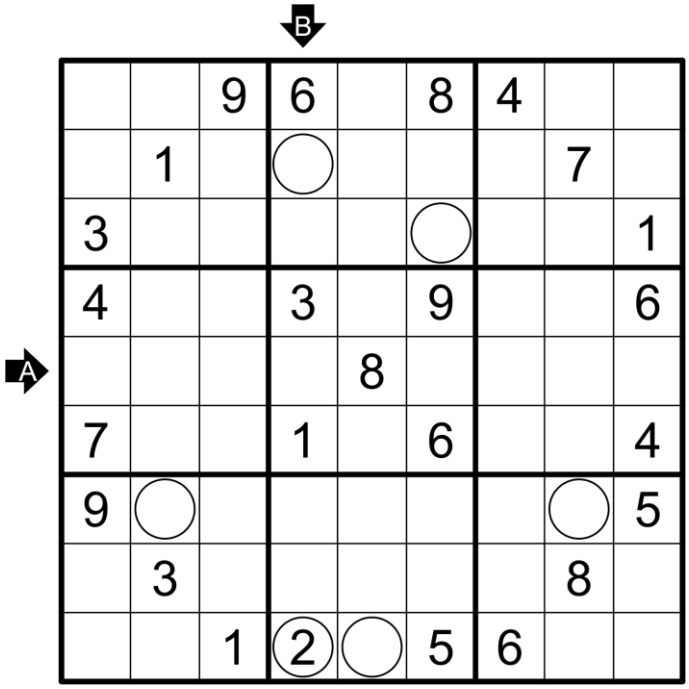
18 Odd Even Count Sudoku 9x9

9 points

Place a digit from 1 to 9 into each empty cell in the grid so that each digit appears exactly once in each row, column and 3x3 outlined box.

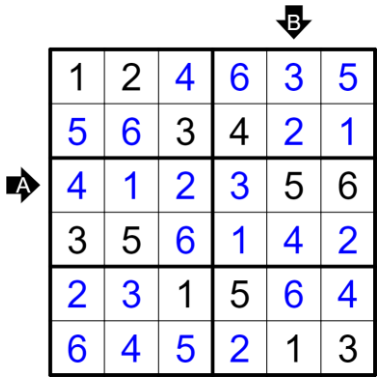
The digit in each circled cell is the number of digits in the 8 surrounding cells that have the same parity (odd/even) as that digit.

Penpa for example:
https://tinyurl.com/2gb9o4hh



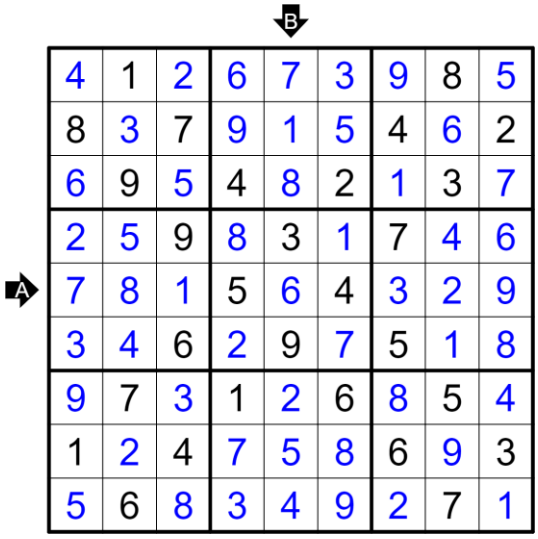
Solutions

Classic Sudoku 6x6



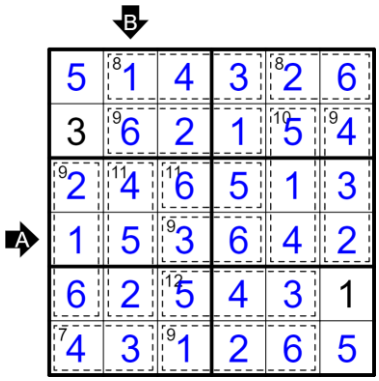
Key: 412356,325461

Classic Sudoku 9x9



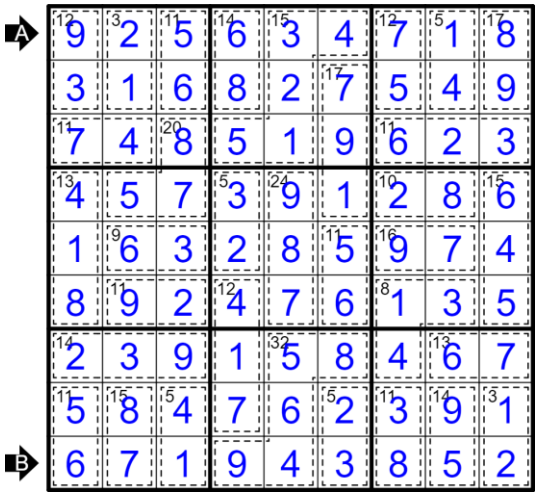
Key: 781564329,718369254

Killer Sudoku 6x6



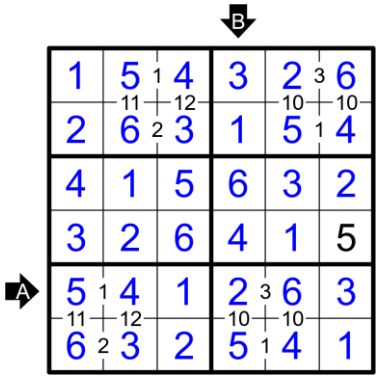
Key: 153642,164523

Killer Sudoku 9x9



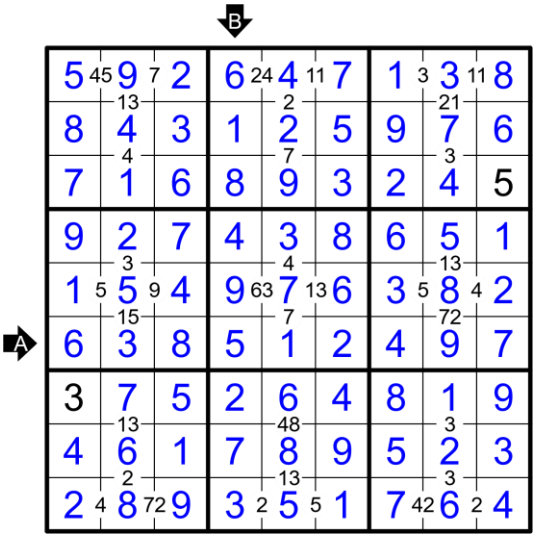
Key: 925634718,671943852

Mathdoku 6x6



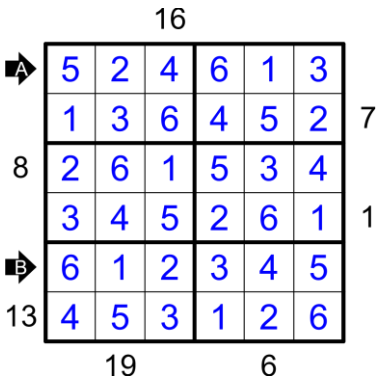
Key: 541263,316425

Mathdoku 9x9



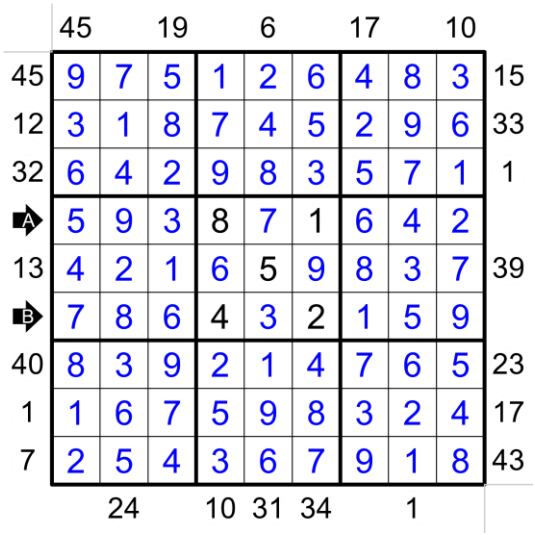
Key: 638512497,618495273

X-Sums Sudoku 6x6



Key: 524613,612345

X-Sums Sudoku 9x9



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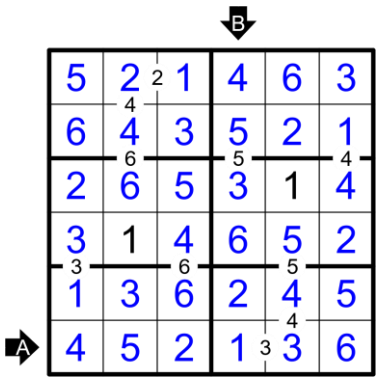
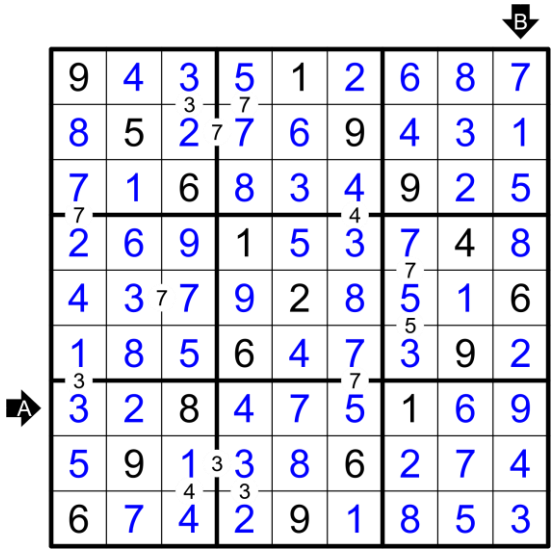
The Greater Sudoku 6x6



Key: 452136,453621

The Greater Sudoku 9x9



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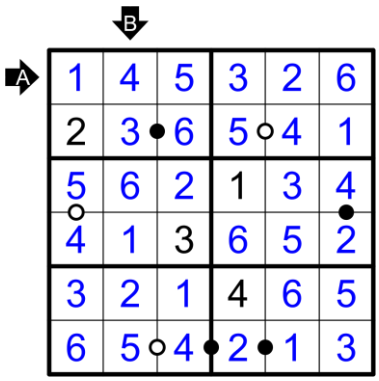
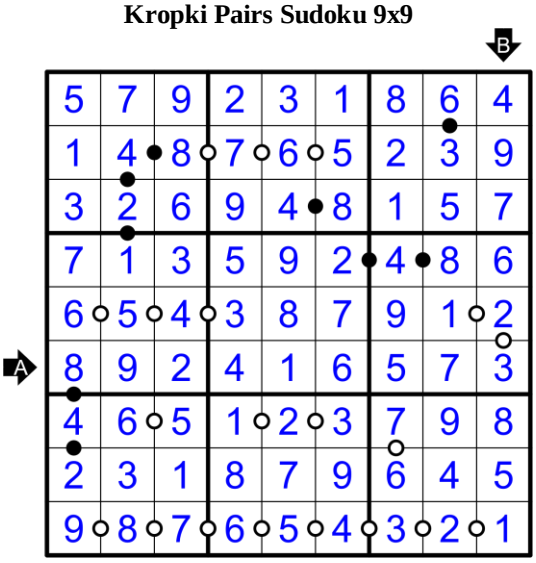
Kropki Pairs Sudoku 6x6



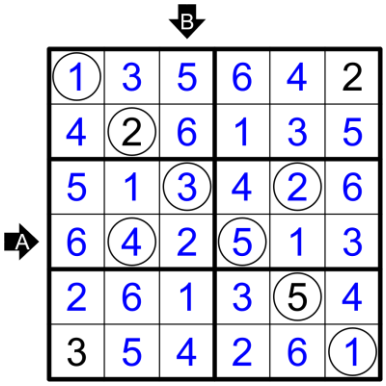
Key: 145326,436125

Kropki Pairs Sudoku 9x9



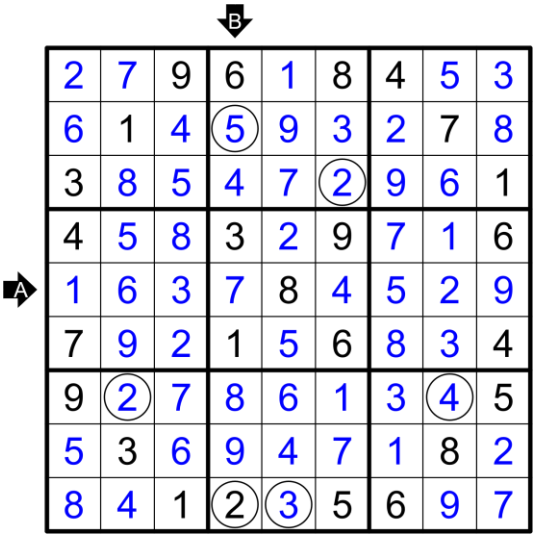
Key: 892416573,497623851

Odd Even Count Sudoku 6x6



Key: 642513,563214

Odd Even Count Sudoku 9x9



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