&

sudoku mahabharat

# Episode – 4
# 24th – 30th March 2023

## Neighbours and Converse
## by
## Ashish Kumar, Kishore Sridharan, Pranav Kamesh S

**Sudoku Mahabharat rounds will also serve as qualifiers for Indian Sudoku Championship for year 2023. Please check** http://logicmastersindia.com/SM/2023sm.asp **for details.**

## Important Links

**Submission Page :** http://logicmastersindia.com/live?contest=SM202304

**Discussion Thread :** http://logicmastersindia.com/t/?tid=3141

**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 Fortress Sudoku 6x6 and Fortress Sudoku 9x9
- 1 each of Odd/Even count Sudoku 6x6 and Odd/Even Count Sudoku 9x9
- 1 each of German Whispers Sudoku 6x6 and German Whispers Sudoku 9x9
- 1 each of Rossini Sudoku 6x6 and Rossini Sudoku 9x9
- 1 each of Consecutive Sudoku 6x6 and Consecutive Sudoku 9x9
- 1 each of XV Sudoku 6x6 and XV 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 24th Mar (but on or before 30th 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.
- Outside 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

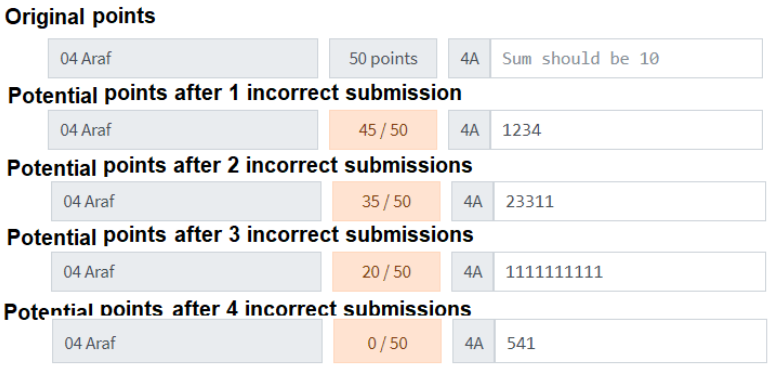
- After solving the puzzle, you need to submit the puzzle using the answer keys.
- You may submit the answer keys anytime during the test duration.
- Answer keys are always to be entered from left to right or top to bottom
- Don't enter any separator unless specified in the answer key
- If one row and 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, 2 |
| Classic Sudoku 9x9 | 6, 4, 7, 5 |
| Fortress Sudoku 6x6 & 9x9 | 3, 10 |
| Odd/Even Count Sudoku 6x6 & 9x9 | 4, 13 |
| German Whispers Sudoku 6x6 & 9x9 | 2, 10 |
| Rossini Sudoku 6x6 & 9x9 | 2, 9 |
| Consecutive Sudoku 6x6 & 9x9 | 2, 9 |
| XV Sudoku 6x6 & 9x9 | 3, 8 |

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**

**- Gray Kanarek** 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 9 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*

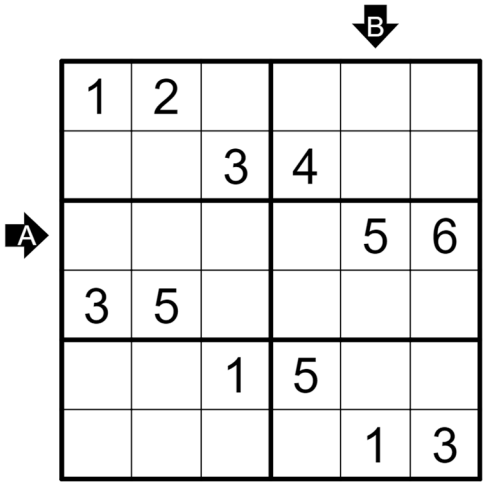
*All answer keys are the same for all puzzles – enter the contents of the marked rows/columns, including given digits but not outside clues, along the direction of the arrow.*

## 1-2 Classic Sudoku 6x6

1 + 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.

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

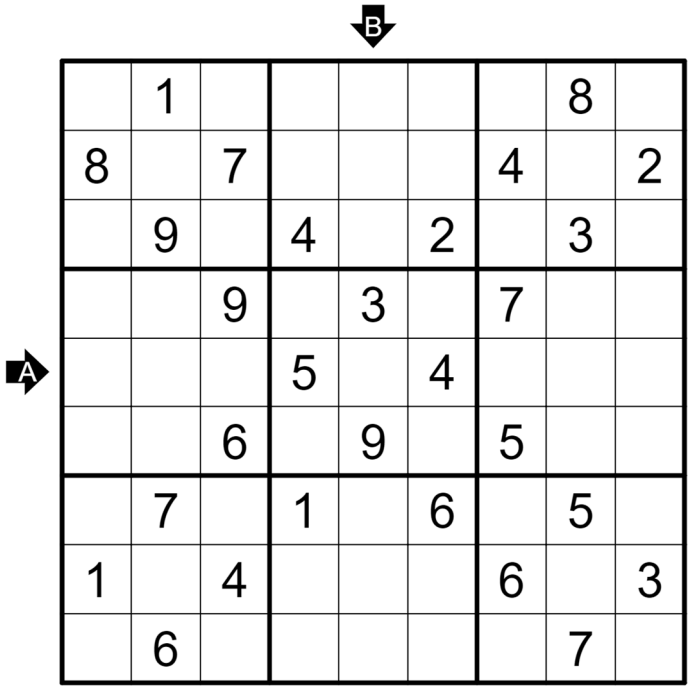



## 3-6 Classic Sudoku 9x9

6 + 4 + 7 + 5 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



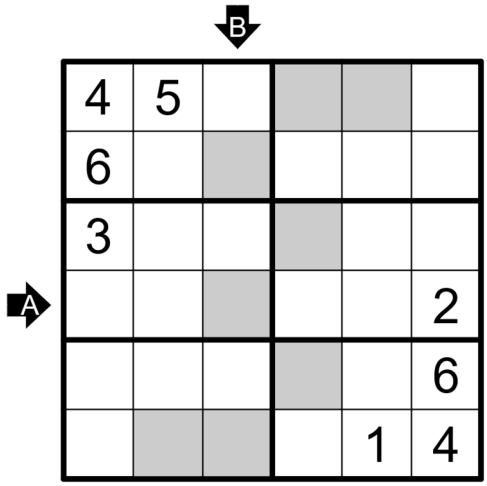
## 7 Fortress Sudoku 6x6

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.

If a shaded cell and an unshaded cell are adjacent then the digit in the shaded cell is larger.

Penpa for example:
https://tinyurl.com/2ft97vpe



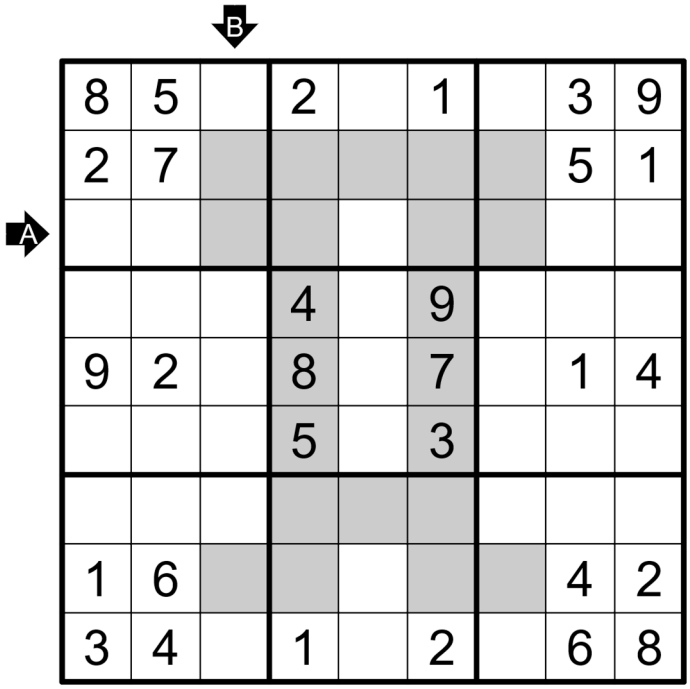

## 8 Fortress Sudoku 9x9

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.

If a shaded cell and an unshaded cell are adjacent then the digit in the shaded cell is larger.

Penpa for example:
https://tinyurl.com/2p3xz6lp



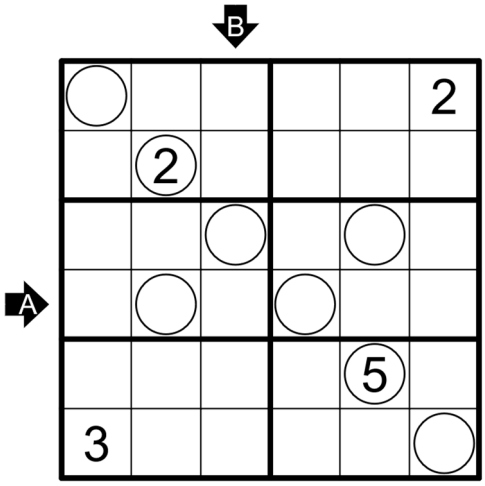
## 9 Odd/Even Count Sudoku 6x6

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



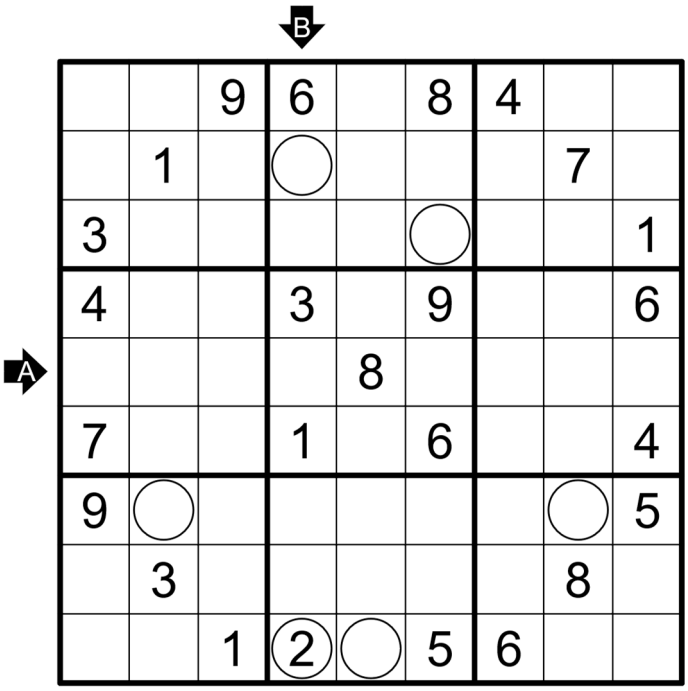

## 10 Odd/Even Count Sudoku 9x9

13 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



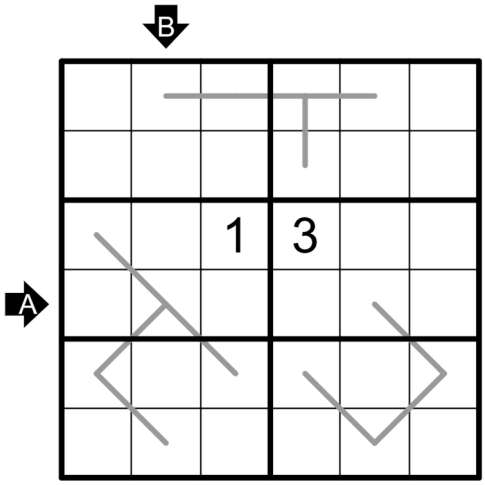
## 11 German Whispers Sudoku 6x6

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.

Adjacent digits along the marked grey lines have a difference of at least 4.

Penpa for example:
https://tinyurl.com/2hpnca56



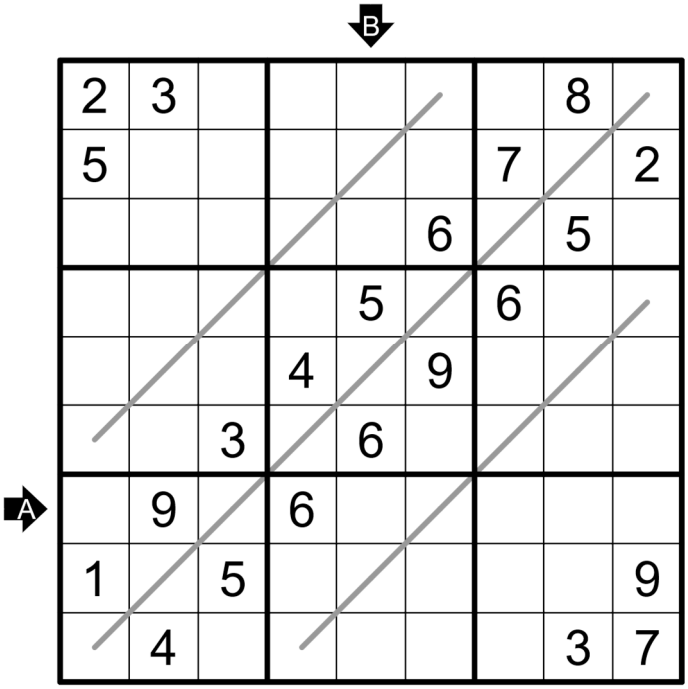

## 12 German Whispers Sudoku 9x9

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.

Adjacent digits along the marked grey lines have a difference of at least 5.

Penpa for example:
https://tinyurl.com/2hst6oj7



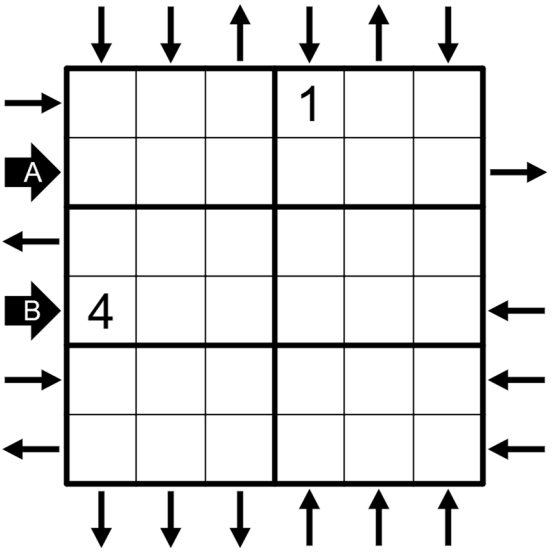
## 13 Rossini Sudoku 6x6

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 arrow outside the grid indicates that the digits within the first box (till the next bold line) in the corresponding direction are in ascending order in the direction of the arrow. All such arrows are marked.

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



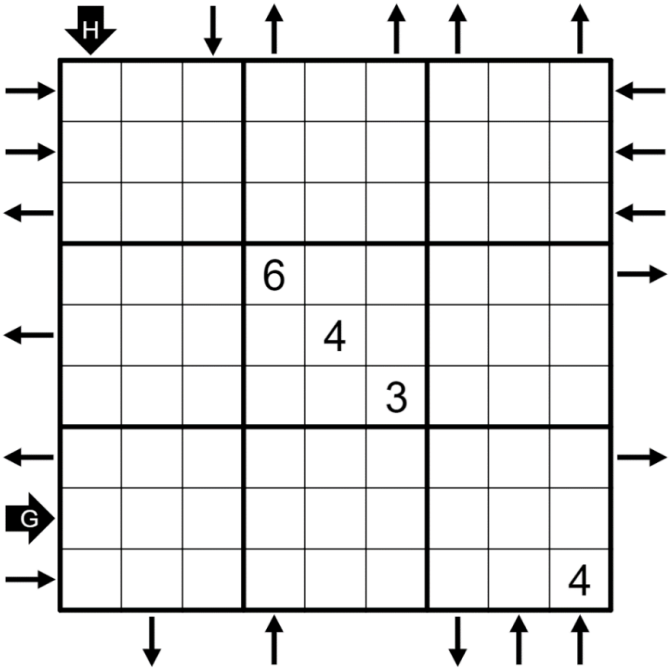

## 14 Rossini Sudoku 9x9

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 arrow outside the grid indicates that the digits within the first box (till the next bold line) in the corresponding direction are in ascending order in the direction of the arrow. All such arrows are marked.

Penpa for example:
https://tinyurl.com/2gvvh8yq



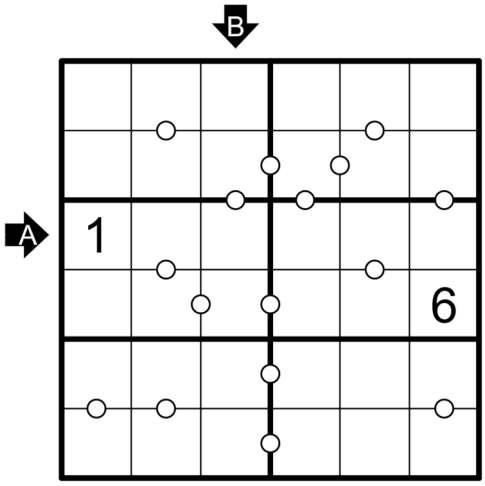
## 15 Consecutive Sudoku 6x6

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.

Adjacent cells marked with a circle contain consecutive digits. All possible circles are marked.

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



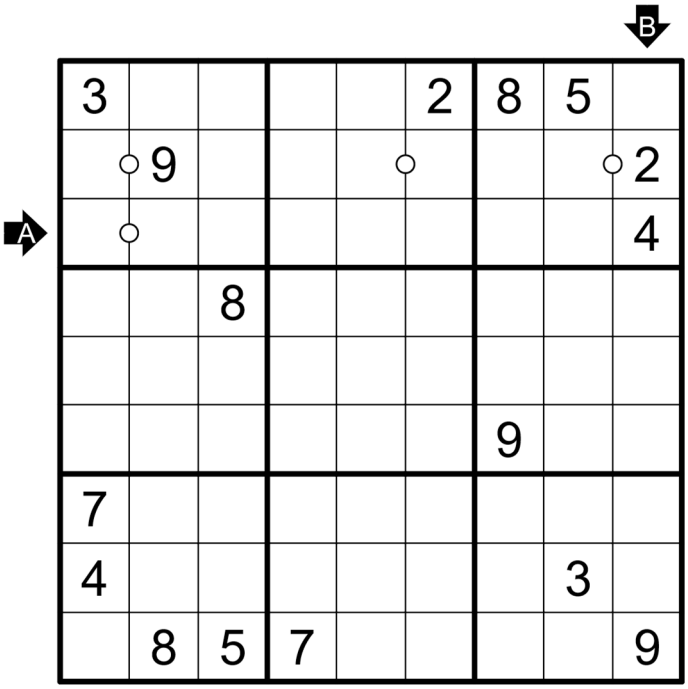

## 16 Consecutive Sudoku 9x9

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.

Adjacent cells marked with a circle contain consecutive digits. All possible circles are marked.

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



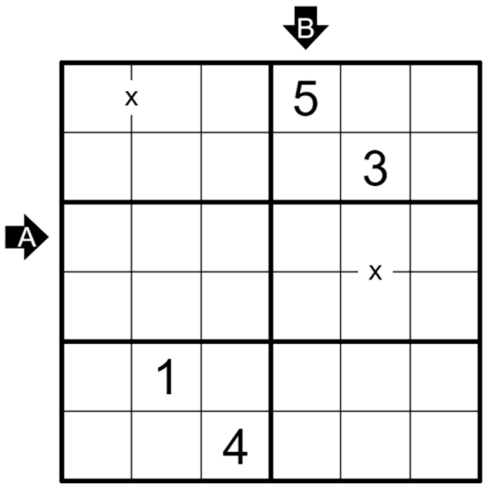
## 17 XV Sudoku 6x6

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.

Adjacent cells with digits summing to 5 are marked by V. Adjacent cells with digits summing to 10 are marked by X. All possible V and X are marked.

Penpa for example:
https://tinyurl.com/y32jyfdp



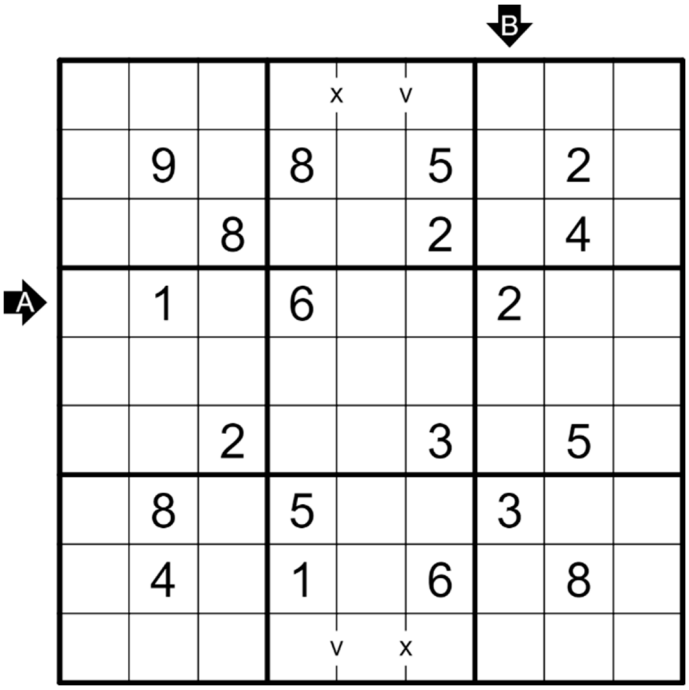

## 18 XV Sudoku 9x9

8 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.

Adjacent cells with digits summing to 5 are marked by V. Adjacent cells with digits summing to 10 are marked by X. All possible V and X are marked.

Penpa for example:
https://tinyurl.com/y2pjtteo



# Solutions

### Classic Sudoku 6x6

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 4 | 6 | 3 | 5 |
| 5 | 6 | 3 | 4 | 2 | 1 |
| 4 | 1 | 2 | 3 | 5 | 6 |
| 3 | 5 | 6 | 1 | 4 | 2 |
| 2 | 3 | 1 | 5 | 6 | 4 |
| 6 | 4 | 5 | 2 | 1 | 3 |

Key: 412356,325461

### Classic Sudoku 9x9

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 4 | 1 | 2 | 6 | 7 | 3 | 9 | 8 | 5 |
| 8 | 3 | 7 | 9 | 1 | 5 | 4 | 6 | 2 |
| 6 | 9 | 5 | 4 | 8 | 2 | 1 | 3 | 7 |
| 2 | 5 | 9 | 8 | 3 | 1 | 7 | 4 | 6 |
| 7 | 8 | 1 | 5 | 6 | 4 | 3 | 2 | 9 |
| 3 | 4 | 6 | 2 | 9 | 7 | 5 | 1 | 8 |
| 9 | 7 | 3 | 1 | 2 | 6 | 8 | 5 | 4 |
| 1 | 2 | 4 | 7 | 5 | 8 | 6 | 9 | 3 |
| 5 | 6 | 8 | 3 | 4 | 9 | 2 | 7 | 1 |

Key: 781564329,718369254

### Fortress Sudoku 6x6

| | | | | | |
|---|---|---|---|---|---|
| 4 | 5 | 1 | 2 | 6 | 3 |
| 6 | 2 | 3 | 1 | 4 | 5 |
| 3 | 4 | 2 | 6 | 5 | 1 |
| 5 | 1 | 6 | 4 | 3 | 2 |
| 1 | 3 | 4 | 5 | 2 | 6 |
| 2 | 6 | 5 | 3 | 1 | 4 |

Key: 516432,132645

### Fortress Sudoku 9x9

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 8 | 5 | 6 | 2 | 7 | 1 | 4 | 3 | 9 |
| 2 | 7 | 9 | 3 | 8 | 4 | 6 | 5 | 1 |
| 4 | 1 | 3 | 9 | 5 | 6 | 8 | 2 | 7 |
| 6 | 3 | 1 | 4 | 2 | 9 | 7 | 8 | 5 |
| 9 | 2 | 5 | 8 | 6 | 7 | 3 | 1 | 4 |
| 7 | 8 | 4 | 5 | 1 | 3 | 2 | 9 | 6 |
| 5 | 9 | 2 | 6 | 4 | 8 | 1 | 7 | 3 |
| 1 | 6 | 8 | 7 | 3 | 5 | 9 | 4 | 2 |
| 3 | 4 | 7 | 1 | 9 | 2 | 5 | 6 | 8 |

Key: 413956827,693154287

### Odd Even Count Sudoku 6x6

| | | | | | |
|---|---|---|---|---|---|
| (1) | 3 | 5 | 6 | 4 | 2 |
| 4 | (2) | 6 | 1 | 3 | 5 |
| 5 | 1 | (3) | 4 | (2) | 6 |
| 6 | (4) | 2 | (5) | 1 | 3 |
| 2 | 6 | 1 | 3 | (5) | 4 |
| 3 | 5 | 4 | 2 | 6 | (1) |

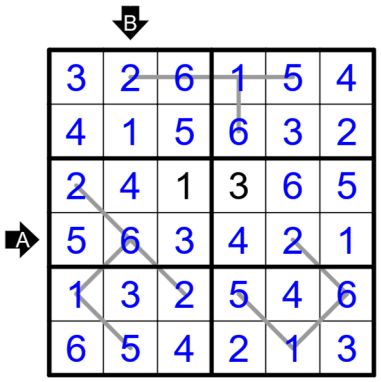
Key: 642513,563214

### Odd Even Count Sudoku 9x9

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | 7 | 9 | 6 | 1 | 8 | 4 | 5 | 3 |
| 6 | 1 | 4 | (5) | 9 | 3 | 2 | 7 | 8 |
| 3 | 8 | 5 | 4 | 7 | (2) | 9 | 6 | 1 |
| 4 | 5 | 8 | 3 | 2 | 9 | 7 | 1 | 6 |
| 1 | 6 | 3 | 7 | 8 | 4 | 5 | 2 | 9 |
| 7 | 9 | 2 | 1 | 5 | 6 | 8 | 3 | 4 |
| 9 | (2) | 7 | 8 | 6 | 1 | 3 | (4) | 5 |
| 5 | 3 | 6 | 9 | 4 | 7 | 1 | 8 | 2 |
| 8 | 4 | 1 | (2) | (3) | 5 | 6 | 9 | 7 |

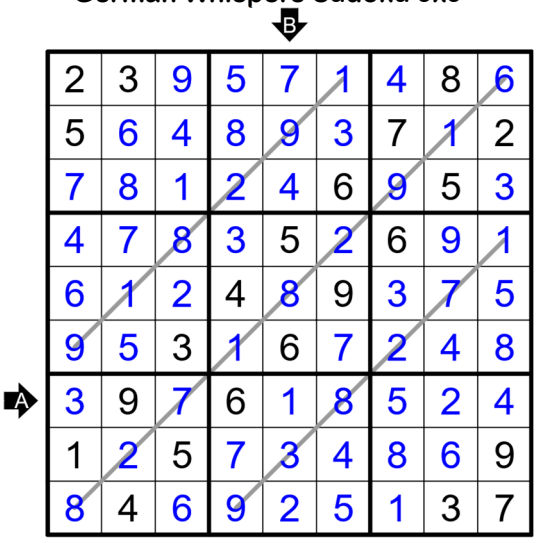
Key: 163784529,654371892

### German Whispers Sudoku 6x6



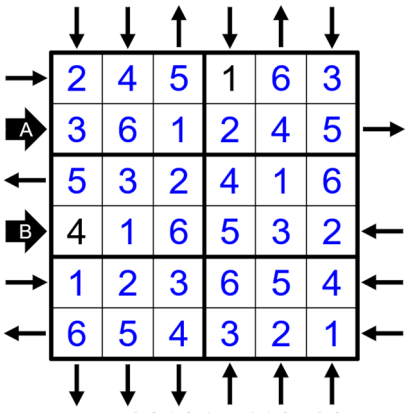
Key: 563421,214635

### German Whispers Sudoku 9x9



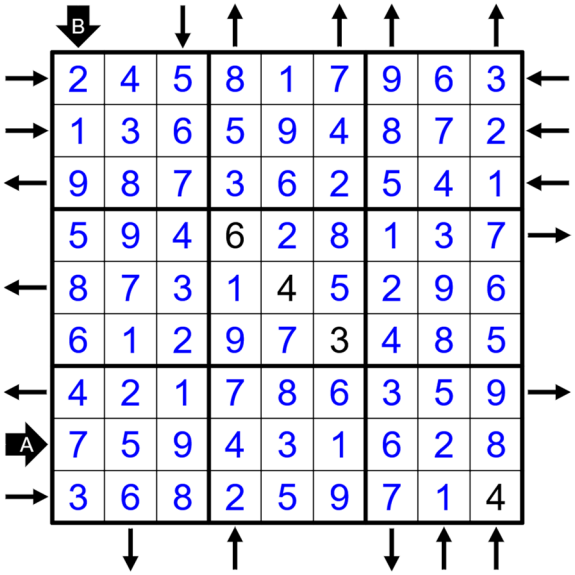
Key: 397618524,794586132

### Rossini Sudoku 6x6



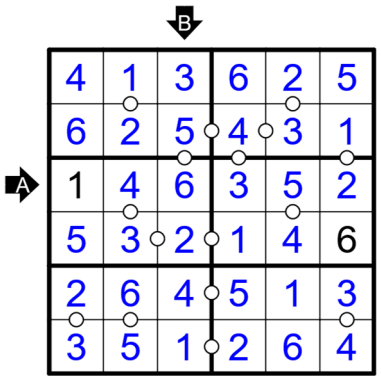
Key: 361245,416532

### Rossini Sudoku 9x9



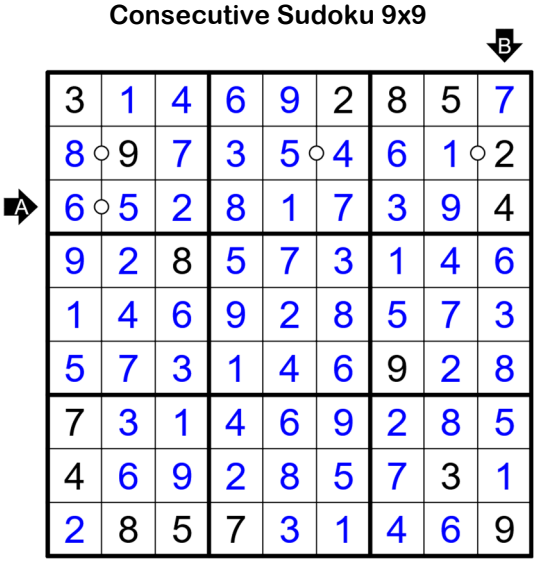
Key: 759431628,219586473

### Consecutive Sudoku 6x6



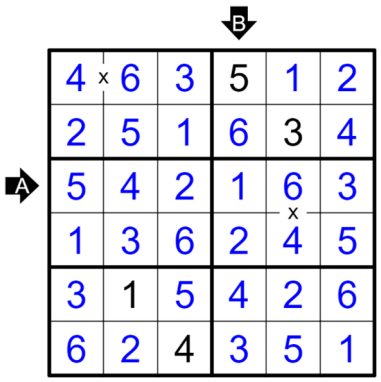
Key: 146352,356241

### Consecutive Sudoku 9x9



Key: 652817394,724638519

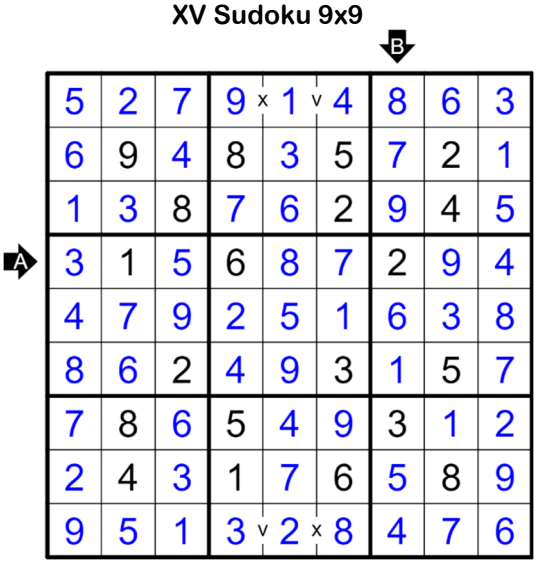
**XV Sudoku 6x6**




| | | | | | |
|---|---|---|---|---|---|
| 4 | 6 | 3 | 5 | 1 | 2 |
| 2 | 5 | 1 | 6 | 3 | 4 |
| 5 | 4 | 2 | 1 | 6 | 3 |
| 1 | 3 | 6 | 2 | 4 | 5 |
| 3 | 1 | 5 | 4 | 2 | 6 |
| 6 | 2 | 4 | 3 | 5 | 1 |

**Key: 542163,561243**

**XV Sudoku 9x9**




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5 | 2 | 7 | 9 | 1 | 4 | 8 | 6 | 3 |
| 6 | 9 | 4 | 8 | 3 | 5 | 7 | 2 | 1 |
| 1 | 3 | 8 | 7 | 6 | 2 | 9 | 4 | 5 |
| 3 | 1 | 5 | 6 | 8 | 7 | 2 | 9 | 4 |
| 4 | 7 | 9 | 2 | 5 | 1 | 6 | 3 | 8 |
| 8 | 6 | 2 | 4 | 9 | 3 | 1 | 5 | 7 |
| 7 | 8 | 6 | 5 | 4 | 9 | 3 | 1 | 2 |
| 2 | 4 | 3 | 1 | 7 | 6 | 5 | 8 | 9 |
| 9 | 5 | 1 | 3 | 2 | 8 | 4 | 7 | 6 |

**Key: 315687294,879261354**