Cygnet Sudoku
Volume 3

Edited By FullDeck and Missing A Few Cards

Cygnet Sudoku Volume 3

Fall 2024

Puzzle Constructors

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froggy
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Edited by FullDeck and Missing a Few Cards
Original cover art by Nikolai Gallagher

This edition first published in 2025.

Original cover art by Nikolai Gallagher.

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Foreword

In setting, solving, and teaching variant sudoku, it is the interactions with people that bring us the most pleasure. We love the joy solvers share through comments on puzzles and video solves of those puzzles. Discussions about logical paths and "can we *prove* that?" bring us tremendous delight. Every time our students are complimented for their puzzles or guest solves, we beam with pride. And in our outreach work, we celebrate the excitement children bring to engaging with the logic and mathematics of puzzling. We will talk about puzzles all day! (Just ask our family and friends.)

In 2024, we resolved to upload a new puzzle to our website every day, and on December 31st we celebrated achieving that goal. We now have well over 500 of our own puzzles in our archive, and once all the puzzles in this book are in the archive there will be almost 300 additional puzzles set by our students.

We are often asked how to share these puzzles and bring others into the world of both solving and creating puzzles. Volumes 1 2, and 3 of the series are available as free pdf downloads and we encourage you to share them far and wide:

`https://missingdeck.net/cygnet1.html`
`https://missingdeck.net/cygnet2.html`
`https://missingdeck.net/cygnet3.html`

If you wish to buy hard copies, there are links to do so on those pages, although we definitely recommend playing the puzzles online.

Many people have also asked how they can help support the continued development of this series. We are fortunate enough not to need financial support. However, if you wish to make a donation to support the students involved in the project, you can do so at `https://ko-fi.com/missingdeckpuzzles`. All donations and puzzle commissions through the Ko-Fi account, as well as all proceeds from hard copy sales of the book, help fund student participation in puzzle-related gatherings and events.

So ... who are we?

We are FullDeck and Missing a Few Cards. We have been using sudoku setting pseudonyms, or *sudokunyms* as we prefer to call them, since we started creating puzzles. Over the past couple of years, though, it has become easier and easier to identify who we are: mention of our university in the middle of a solve, or wishing us happy birthday by first name. With the release of Volume 2, we decided it was finally time to dox ourselves.

We are both academics at Clemson University: FullDeck is Eliza Gallagher, an associate professor in the Engineering and Science Education Department, with a joint appointment to the School of Mathematical and Statistical Sciences. Missing a Few Cards is Neil Calkin, a professor in the School of Mathematical and Statistical Sciences.

We have been teaching puzzles classes for several years, and are also running an undergraduate research project aimed at exploring educational uses of variant sudoku, both in formal and informal learning spaces. If you would like to be on a project mailing list or to become involved with the project, please reach out to us! We are @full_deck and @missingafewcards on Discord, or you can email us at `fulldeck@missingdeck.net`.

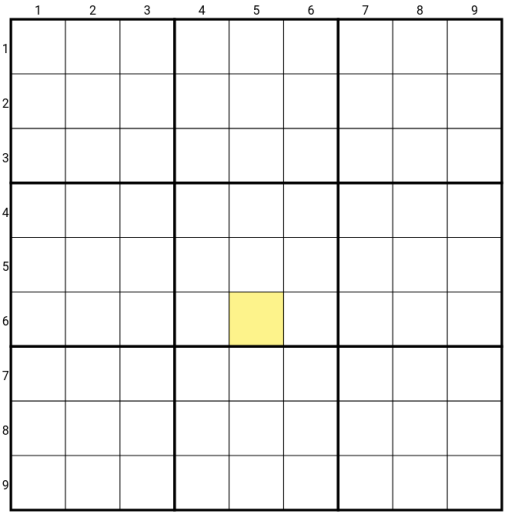
One final note: we have included verbatim the chapters on Variant Sudoku and Solving Online that first appeared in Volume 1, as they will be a handy reference for this volume as well. Feel free to skip them if you are already familiar with variant sudoku and the SudokuPad solving platform.

Now on to the puzzles!

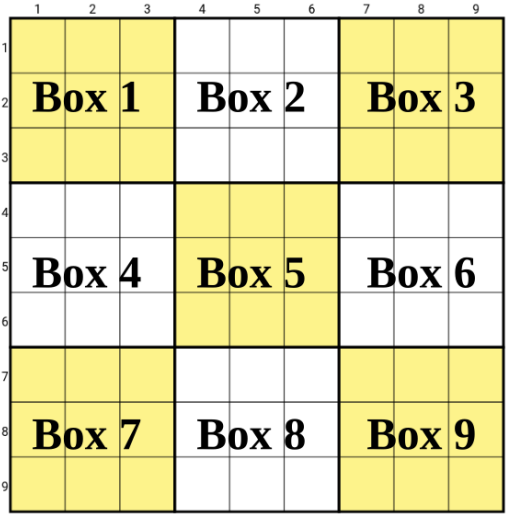
– FullDeck and Missing a Few Cards, January 2025

Variant Sudoku

What is variant sudoku, and how does it differ from classic sudoku? Both forms have a (typically) 9×9 grid, with the grid composed of nine 3×3 square boxes. Individual cells are referred to by row and column number, so that r6c5 refers to the cell in row 6 (counting from the top to bottom) and column 5 (counting from left to right).



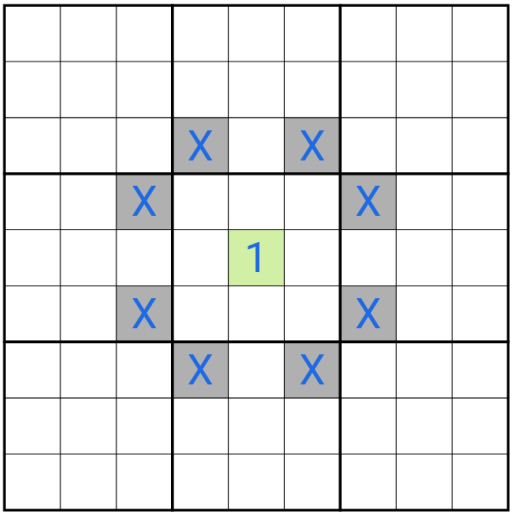
The boxes are labeled 1-9, with boxes 1, 2, 3 in the top band; 4, 5, 6 in the middle band; and 7, 8, 9 in the bottom band of three boxes.



In classic sudoku, the starting grid is populated with some given digits, and the goal is to fill the entire grid with digits 1-9 so that every row, column and box contains a complete set of the digits 1-9. It is known that for a classic sudoku puzzle to have a unique solution it must have at least 17 given digits, although many more may be necessary depending on their placement. Often, the number of given digits is used as a proxy for difficulty – the fewer the given digits, the harder the puzzle is assumed to be – although there are lots of examples demonstrating that this is a poor proxy.

In variant sudoku, extra types of clues are included, other than given digits. These may involve certain types of lines in the grid (palindromes, thermometers, arrows, modular lines, renbans, between lines, and more) or other symbols indicating re-

lationships between cells (kropki dots, quadruples, Xs, Vs, and more). Sometimes the additional rules needn't have any symbols or digits given at all! Such rules might involve restrictions on how digits are positioned relative to each other. For example, in an antiknight puzzle, digits that are a chess knight's move apart must be different. In this antiknight puzzle, 1 cannot appear in any of the cells marked with an 'X', since each of those cells could be reached in a single move of a chess knight from the 1 in the green cell.



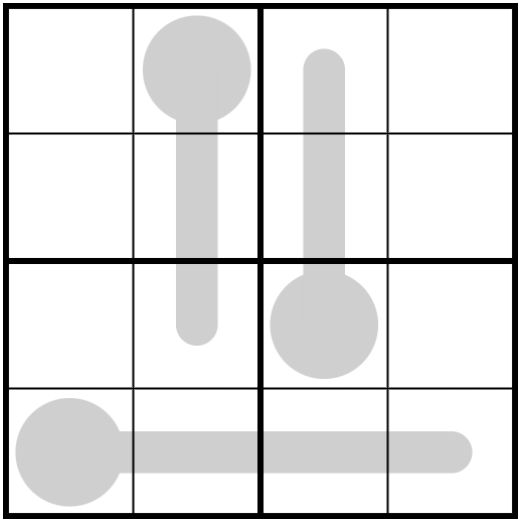
The constraints used for each puzzle in this book are stated in full with the puzzle, and should be self-explanatory. If you need further explanation, though, please reach out to us at `fulldeck@missingdeck.net`. For tips on how to use the online solving platform, see the Solving Online chapter starting on page 106 or check out some of our videos about learning to solve variant sudoku at `https://mdp.tiny.us/learning-videos`.

4×4 Puzzles

Puzzles in this section are all 4×4 puzzles using only the digits 1–4. The smaller size allows both setter and solver to explore some of the logical implications of a particular constraint or combination of constraints. This is also a good chance to start getting used to the online solving platform. If you haven't used SudokuPad before, we recommend opening one of the puzzles from this chapter online and trying out some of the features explained in the Solving Online chapter.

Heating Up on a Cold Day

by Conejito and xiaobudian



Rules:

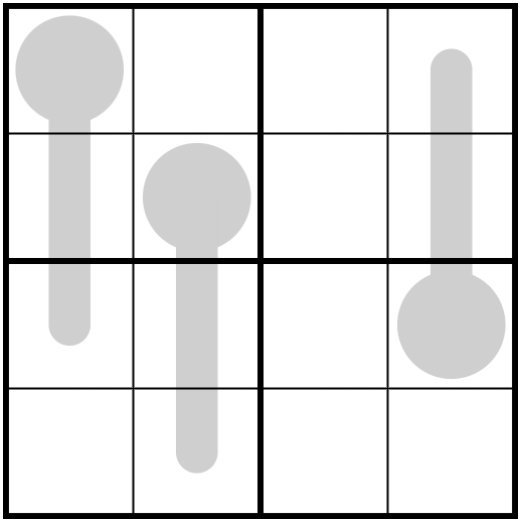
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/bpb771172j`

Simple Temp

by Trip Tup



Rules:

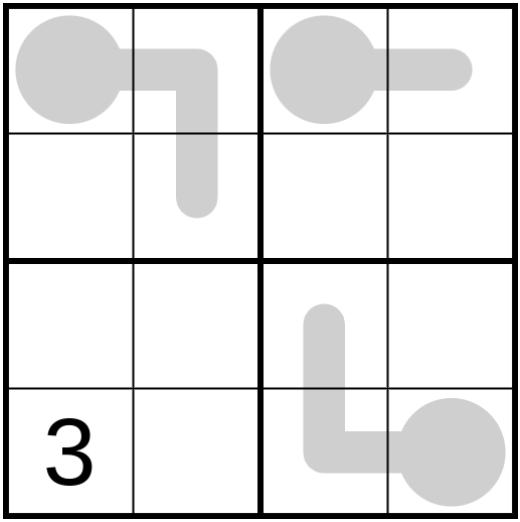
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/vi7i0xagro`

Heat Wave

by Mastrosetter and Orion



Rules:

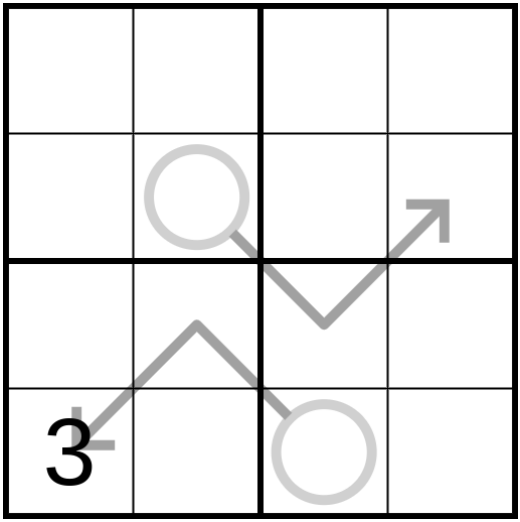
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/2qhbk4mhb5`

Zipper

by Orion and LadyGrey



Rules:

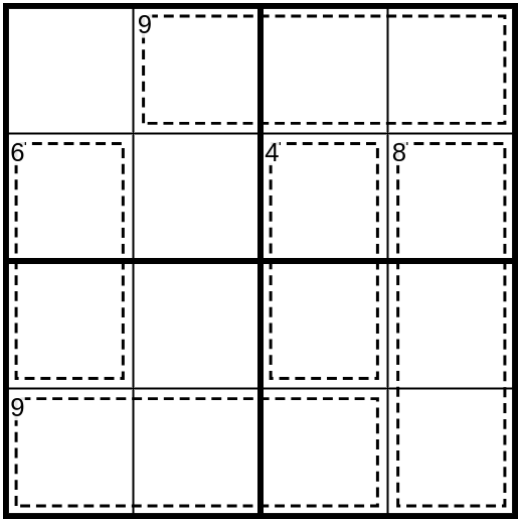
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

`https://sudokupad.app/c19k7xjlzk`

Super Killer

by Princess Glitter Sparkles



Rules:

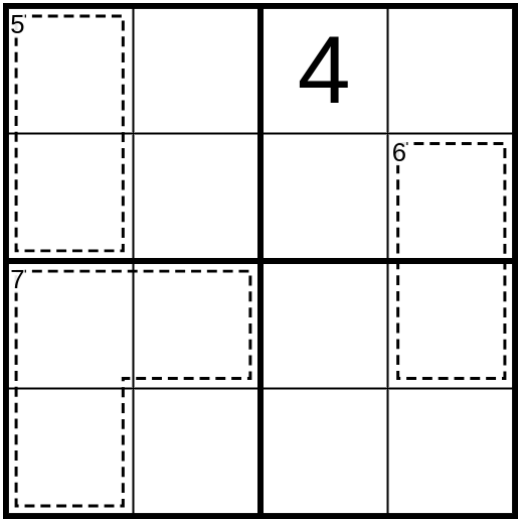
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/3g63968c7c`

Tetris With a 4

by Qualter and KingFish



Rules:

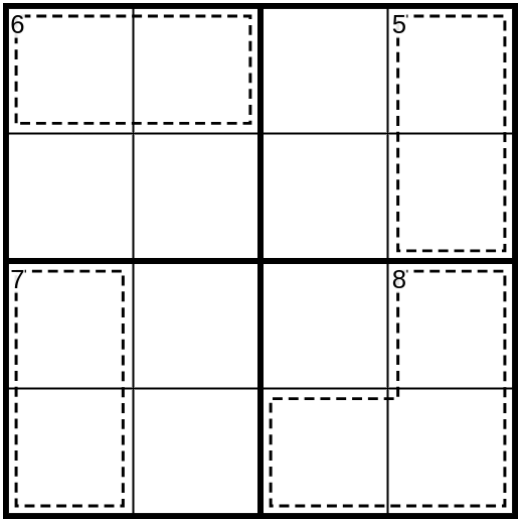
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/0cekujd4au`

Drum Start

by Café and PennePuzzles



Rules:

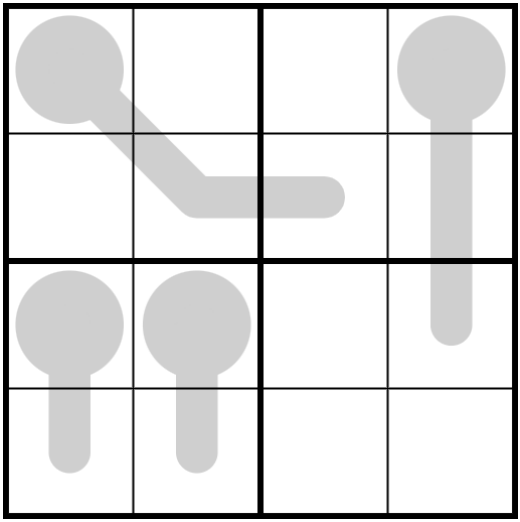
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/i3cirwj42h`

Hot and Cold

by karl and Hinsley



Rules:

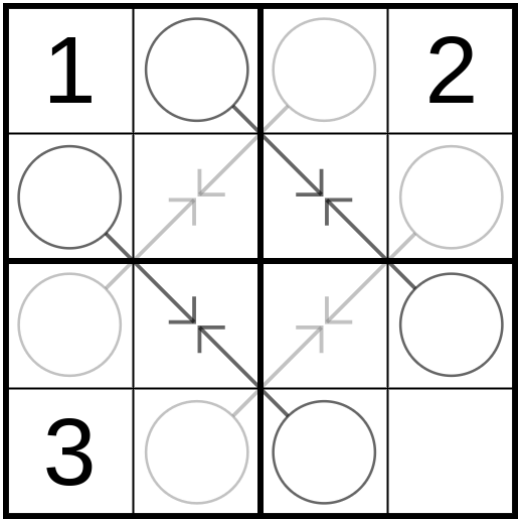
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/0sb9q7ebzs`

X's and O's

by KingFish



Rules:

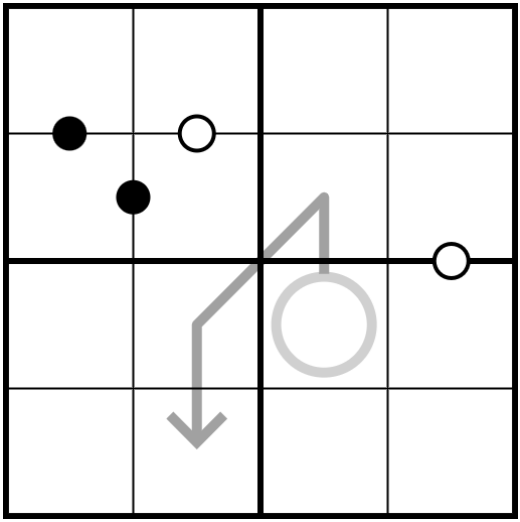
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges. All arrow shafts are straight.

`https://sudokupad.app/tk0nr1v2iw`

Trace the Dotted Line

by $\pi\rho$



Rules:

• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

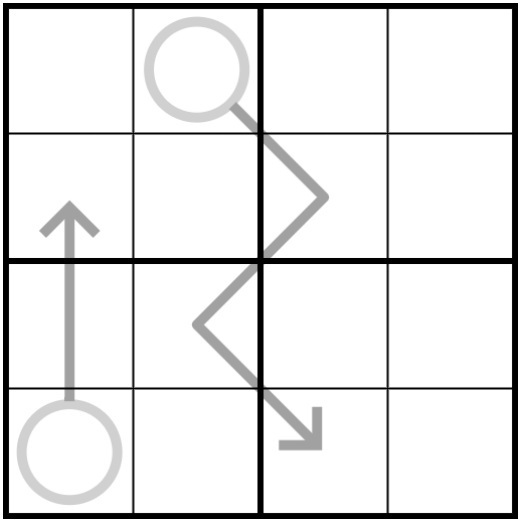
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

`https://sudokupad.app/2h79qbsbs7`

R-Row

by Raspberry Dime and 591



Rules:

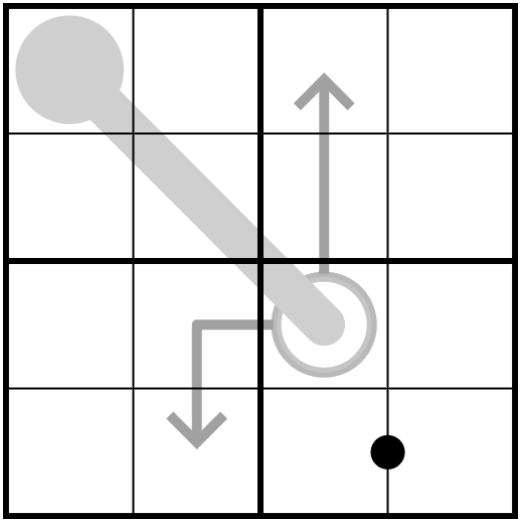
• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

`https://sudokupad.app/6deakj9yko`

The Kitchen Sink

by Princess Glitter Sparkles



Rules:

• *Standard* 4×4 *sudoku:* The digits 1 through 4 appear in every row, column, and 2x2 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

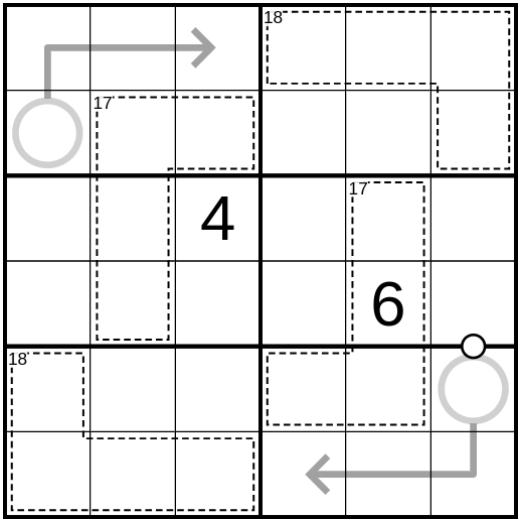
`https://sudokupad.app/wckuc5c8ga`

6×6 Puzzles

Puzzles in this section are all 6×6 puzzles using only the digits 1–6. As with the 4×4 puzzles, this allows for a more contained exploration of logic associated with particular constraints. That doesn't mean they are necessarily easy, though! Some of the 6×6 puzzles in this chapter may be harder than some of the easier 9×9 puzzles. As with all of the puzzles in this book, we recommend solving online, rather than on paper.

Cage the Dotted Line

by $\pi\rho$



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

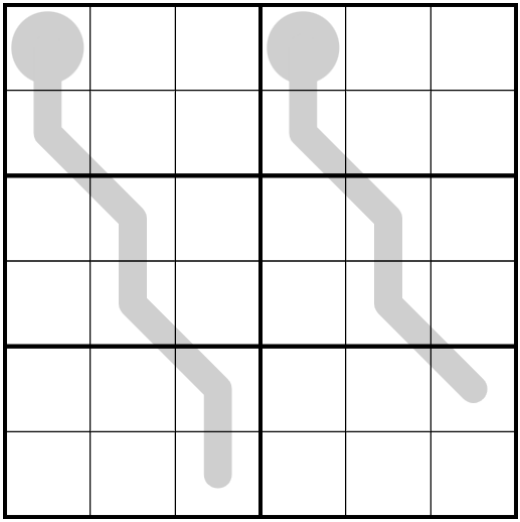
• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/helycapibv`

Mini Absolute GAS

by xiaobudian



Rules:

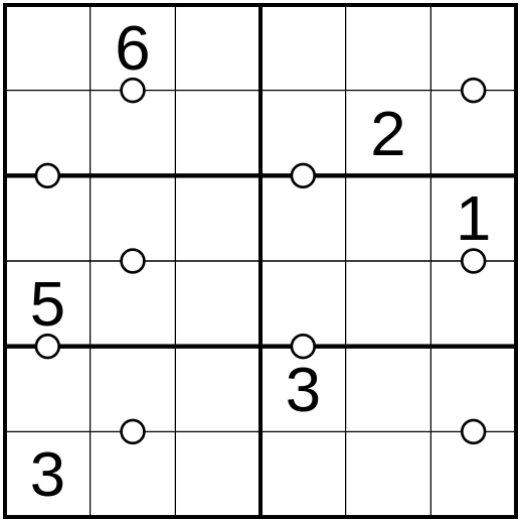
• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/ctfz8sd5eb`

Let's Settle Our Differences

by El Presidente



Rules:

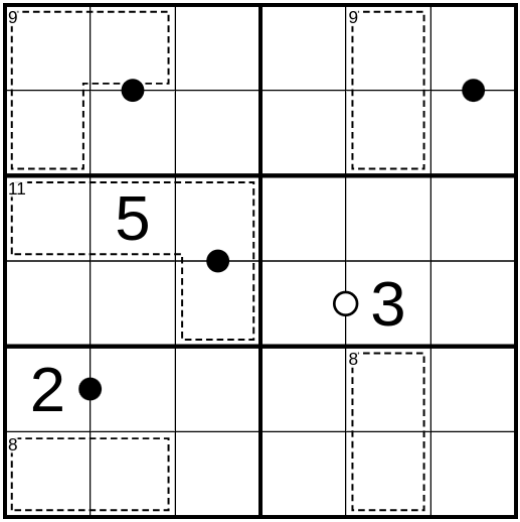
• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Consecutive Pairs:* Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/9ve51iadky`

Kropki's Cage

by Mastrosetter



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

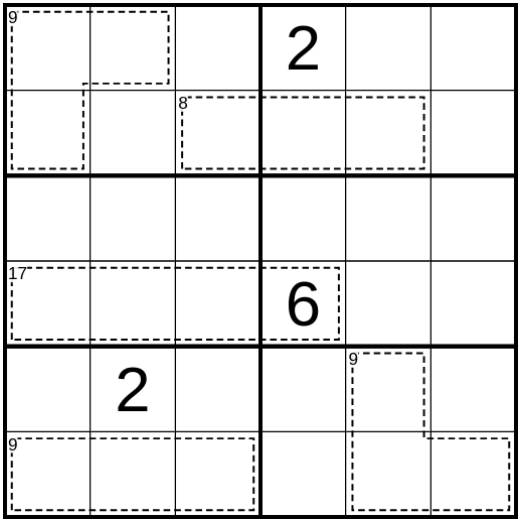
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/milbsn8sbg`

Six Knights Ago

by Silver Lace and El Presidente



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

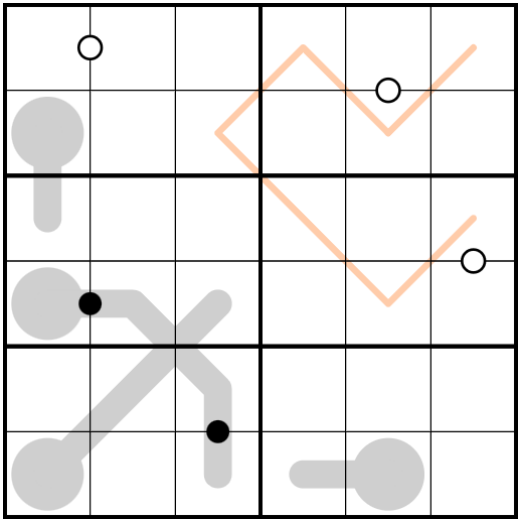
• *Antiknight:* Cells that are a chess knight's move apart cannot contain the same digit.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/fbh7jnzg7l`

Cupid's Thermo

by LatteLover and Silver Lace



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip. At intersections, thermos continue straight.

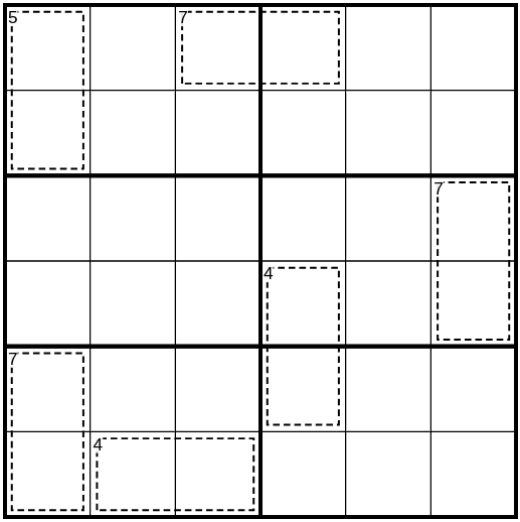
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Entropic Lines:* Any set of three adjacent cells along an entropic line must contain a low digit (12), a middle digit (34), and a high digit (56).

`https://sudokupad.app/ek0cxy3per`

Non-con-Cages

by Conejito



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

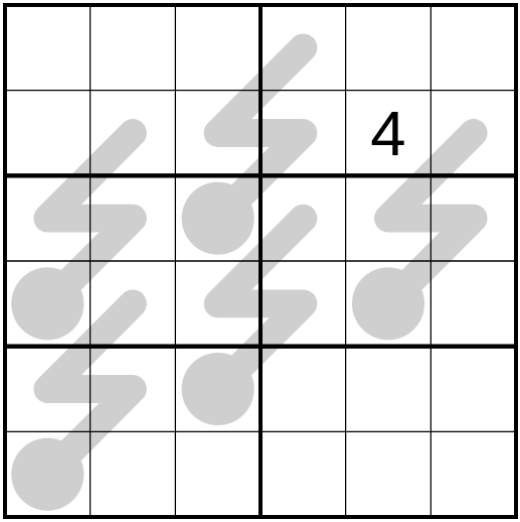
• *Non-consecutive:* Digits in orthogonally adjacent cells may not be consecutive.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/luf47wg0fs`

Lightning

by Silver Lace



Rules:

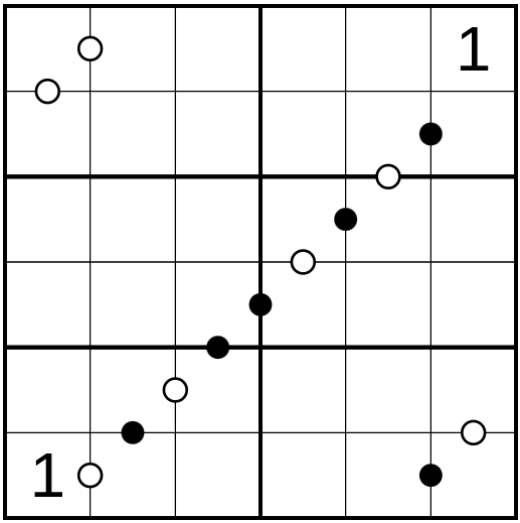
• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/sh25cxmf2g`

The Chain

by LatteLover



Rules:

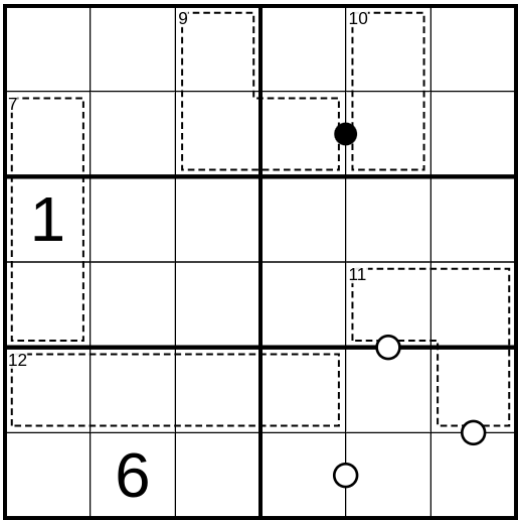
• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/207txugr4f`

Six Sudoku Smasher

by El Presidente



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

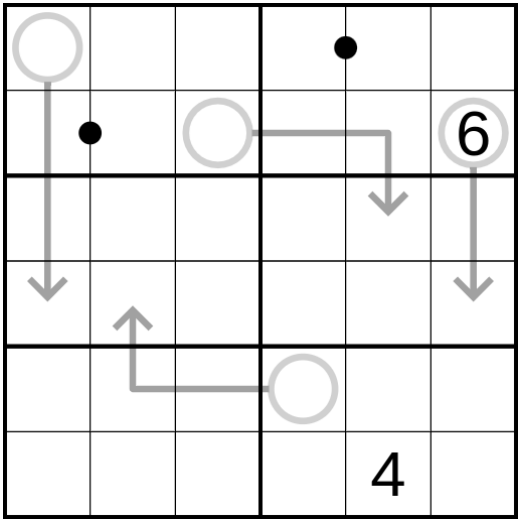
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/y6q2pafatp`

Get to the Point

by Trip Tup



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

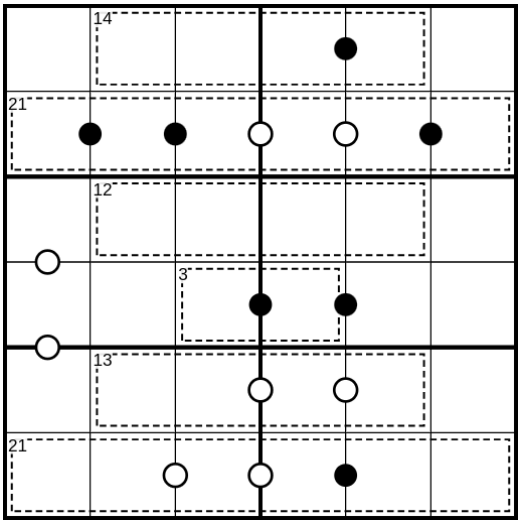
• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

`https://sudokupad.app/ja2wykjamg`

Abstract Art

by Silver Lace



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

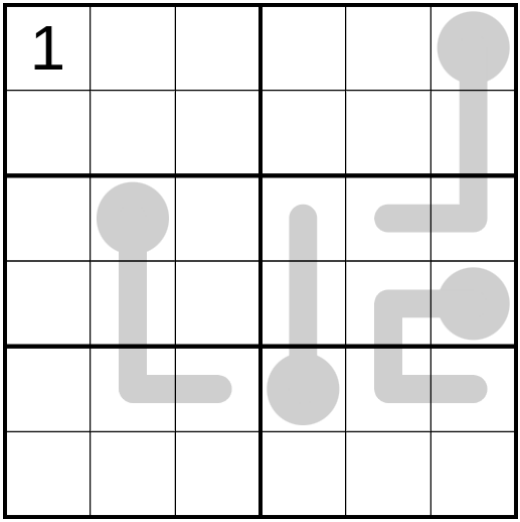
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/4nyz48nc0l`

Triple Dip

by 591



Rules:

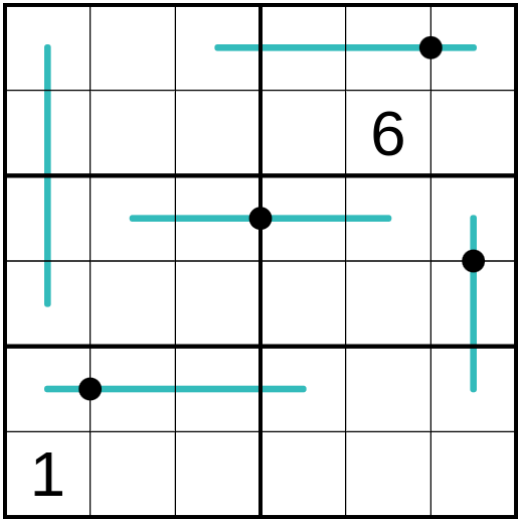
• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/0sgazhol4m`

Modded Dots

by Conejito



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

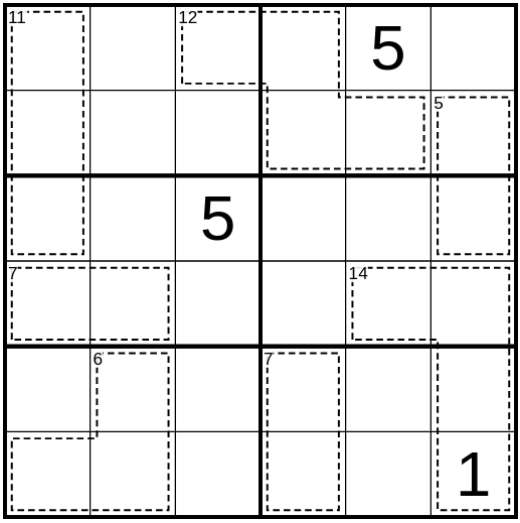
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

`https://sudokupad.app/lfielouo75`

Zoo

by Mastrosetter



Rules:

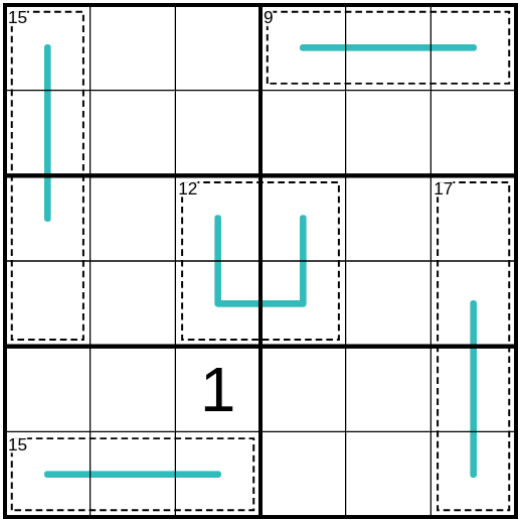
• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/hxf40k90f0`

Modular Fun

by Conejito



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

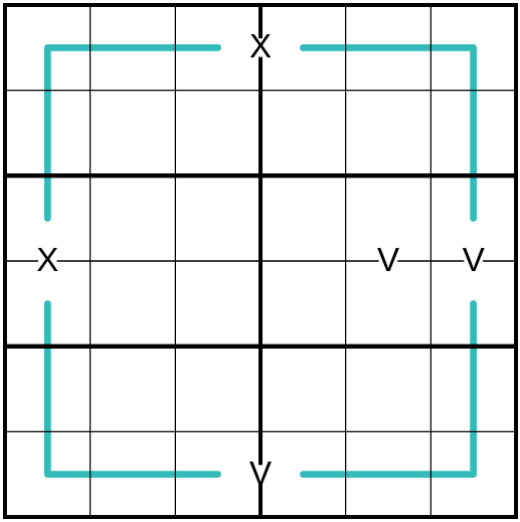
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

`https://sudokupad.app/yx6xlmzg04`

Circuits

by LatteLover and Mastrosetter



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

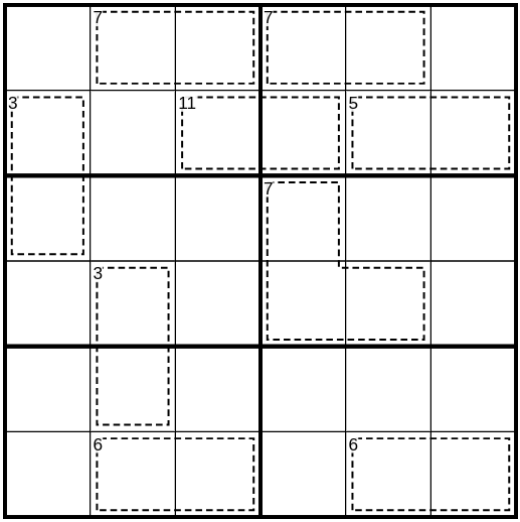
• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• *X and V Pairs:* Digits separated by a V must sum to 5. Digits separated by an X must sum to 10. Not all Xs and Vs are necessarily given.

`https://sudokupad.app/3v6xkg8vi4`

Beautiful Mess

by Conejito and xiaobudian



Rules:

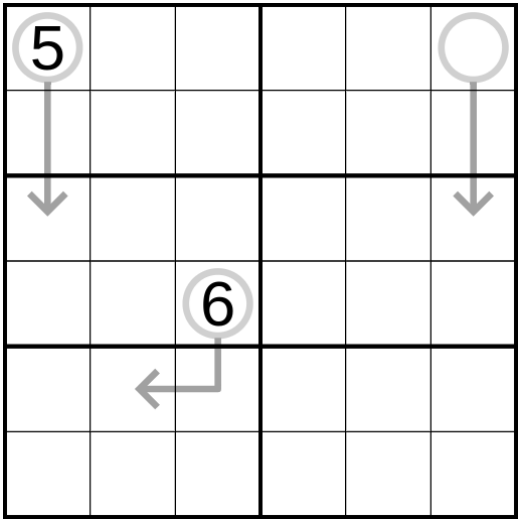
• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/c2cv4lkauu`

Knights in Training

by Trip Tup and xiaobudian



Rules:

• *Standard* 6×6 *sudoku:* The digits 1 through 6 appear in every row, column, and 2x3 box.

• *Antiknight:* Cells that are a chess knight's move apart cannot contain the same digit.

• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

`https://sudokupad.app/ppvn6qa2c2`

9×9 Puzzles

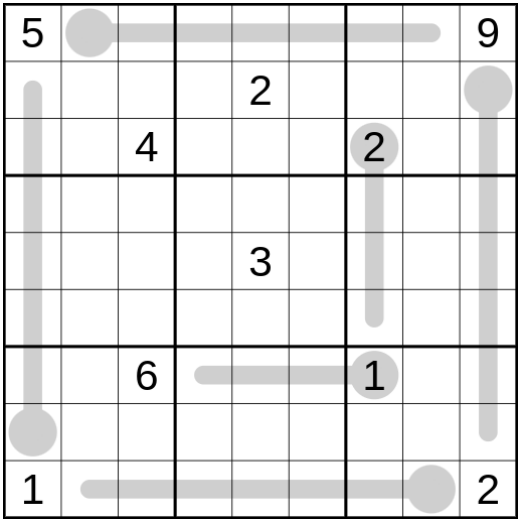
The puzzles in this chapter are arranged from easier to harder based on testing by the class. The ones near the beginning of the chapter should be straightforward for solvers with some experience. The solutions may include logical interactions between constraints, as well as the use of pointing pairs and triples.

As you progress through the chapter, the difficulty increases. You may need to think about how different constraints interact to limit or force placement of digits. You will almost certainly need centermarking and cornermarking to keep track of intermediate deductions. You might need to use colours to spot ways in which the geometry of the grid moves the solution forward. You may have to think carefully about where the puzzle is under the most pressure in order to spot a key deduction. You may have to think four or five steps ahead to spot why a particular digit cannot go in a particular cell. Having to look ahead further than that starts gets into the "guessing" category, so if you can't spot a contradiction within that many logical steps, try looking elsewhere in the puzzle.

Some of the puzzles in this chapter use a fog mechanic, with only part of the grid visible at the start. As correct digits are placed, nearby fog clears, possibly revealing more clues. Fog puzzles can only be solved online.

Home Temp

by Damsalfly



Rules:

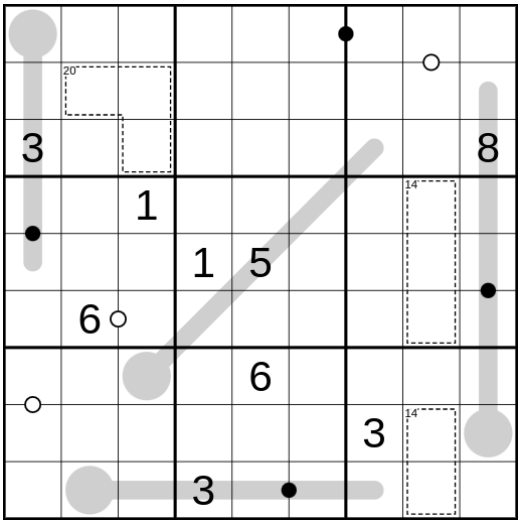
• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/9dd4xx5p8k`

What's the Temp?

by Mastrosetter



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

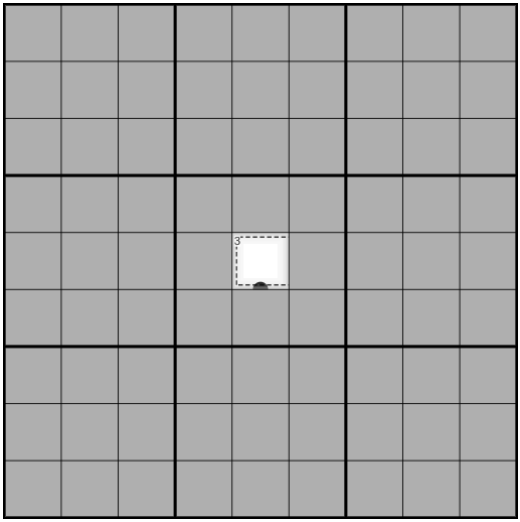
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/6hrddf82az`

One Headlight

by La Lune



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Fog:* Part of the grid is covered with fog. As correct digits are placed, the fog will clear from surrounding cells.

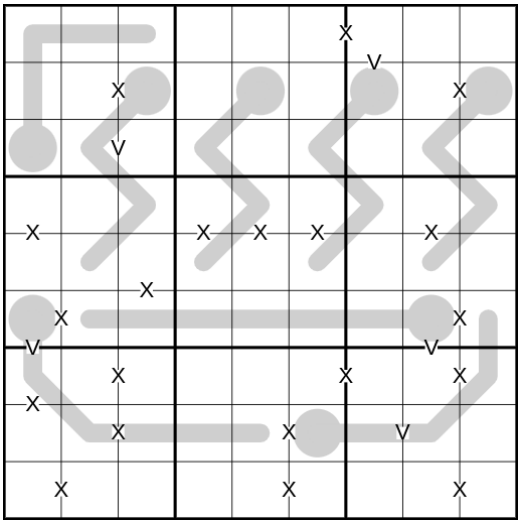
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

`https://sudokupad.app/b6ziiukqar`

Add Noodles Please

by xiaobudian



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

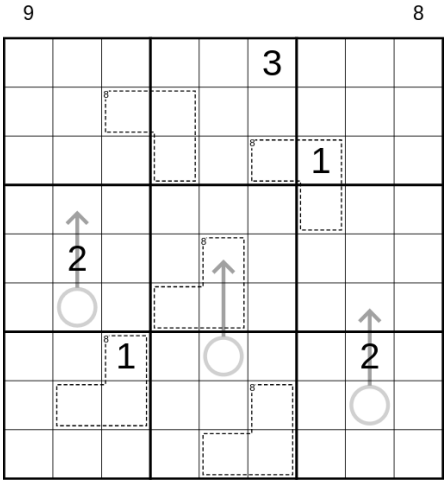
• *X and V Pairs (Negative):* Digits separated by a V must sum to 5. Digits separated by an X must sum to 10. **All possible Xs and Vs are given.**

Note: A harder version of this puzzle appears on Page 86.

`https://sudokupad.app/6yx7jfoh3j`

Castle Under Siege

by $\pi\rho$



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Antiknight:* Cells that are a chess knight's move apart cannot contain the same digit.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

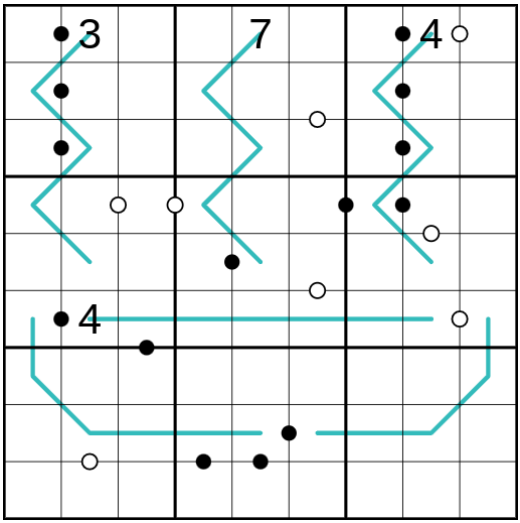
• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

• *Skyscrapers:* Each cell represents a skyscraper whose height is the digit in that cell. Taller skyscrapers obscure the view of smaller ones. Clues outside the grid tell how many skyscrapers are visible looking across the row or column from the direction of the clue.

`https://sudokupad.app/u5gtkbagk0`

Kropki's Tea

by xiaobudian



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

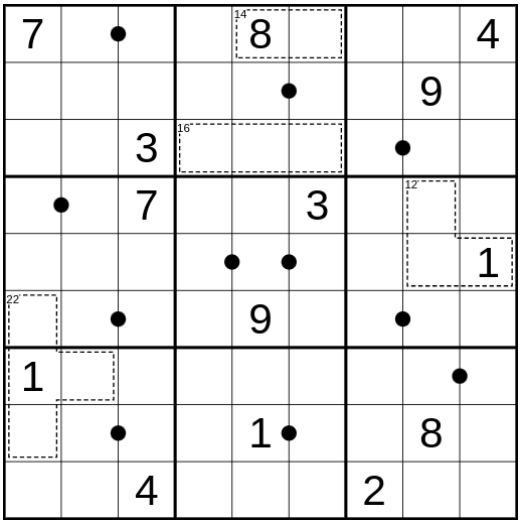
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

`https://sudokupad.app/kwgrtje67b`

Niners

by El Presidente



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

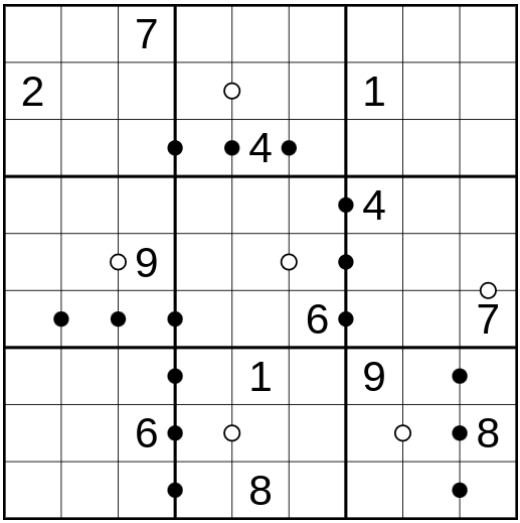
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

`https://sudokupad.app/pbr4dcz4z1`

Just Hit the Dottery

by Silver Lace and El Presidente



Rules:

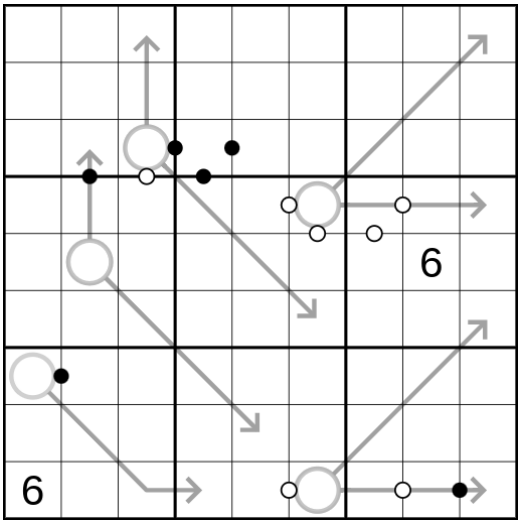
• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/7dab77nmtg`

Drrows and Aots

by Conejito



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

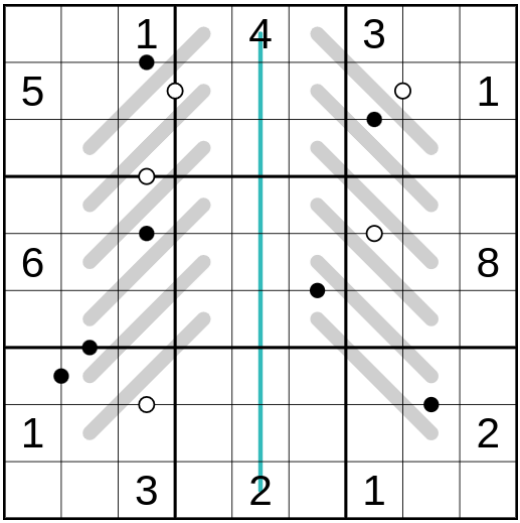
• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/epr316klo0`

IT'S TIMEEEE

by El Presidente and Silver Lace



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

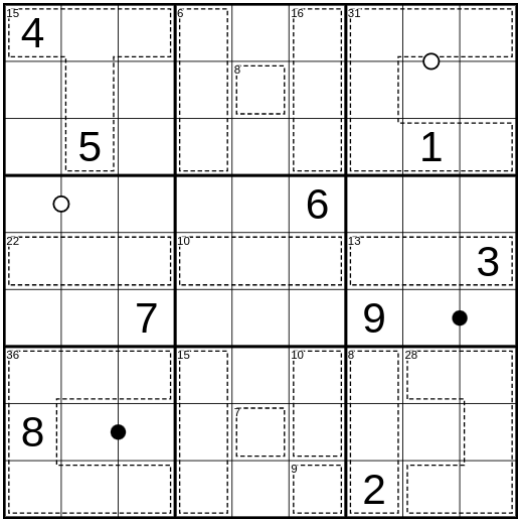
• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• *Palindromes:* Digits on a palindrome read the same forwards as backwards along the line.

`https://sudokupad.app/tuskhg8qwv`

The End

by Mastrosetter



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

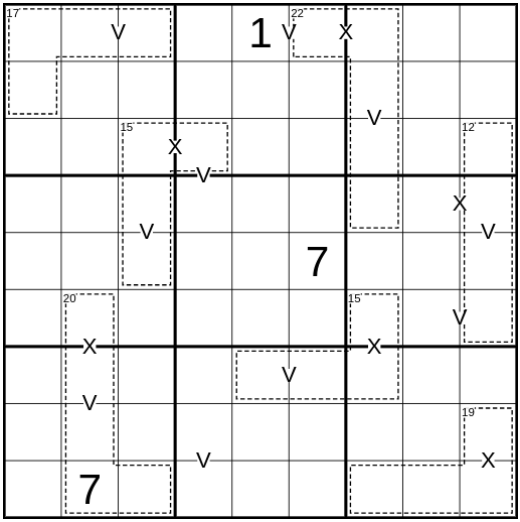
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/pi5d3ws2oq`

Caged in XV

by Conejito



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

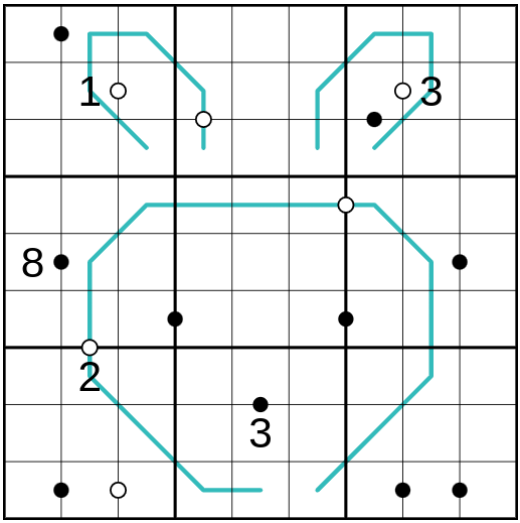
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *X and V Pairs:* Digits separated by a V must sum to 5. Digits separated by an X must sum to 10. Not all Xs and Vs are necessarily given.

`https://sudokupad.app/vbo4xcvtpo`

Bunny

by Conejito



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

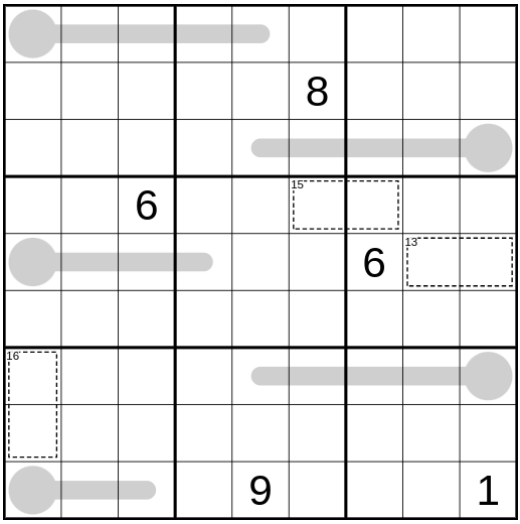
• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/706weyq1g4`

Cageometer

by PennePuzzles



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

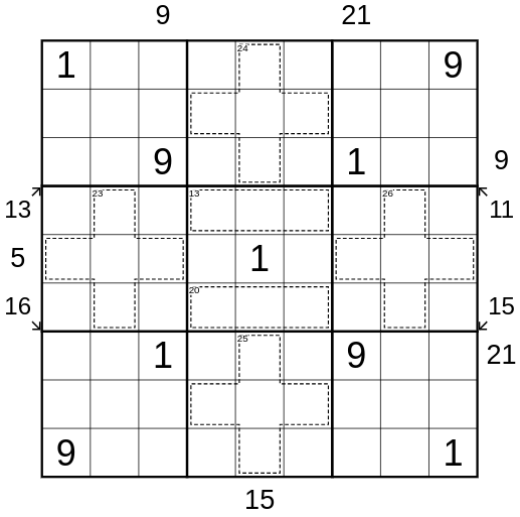
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/o1jrdj2sek`

1–9

by Damsalfly



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Little Killers:* Clues outside the grid with arrows give the sum of the digits along the indicated diagonal. Digits can repeat if allowed by other rules.

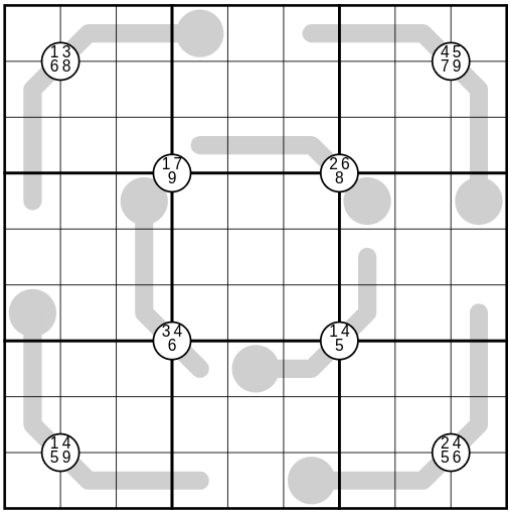
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Sandwich:* Clues outside the grid without arrows indicate the sum of the digits between 1 and 9 in that row or column.

`https://sudokupad.app/asr5kh80ad`

H_2O Nucleation

by xiaobudian



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

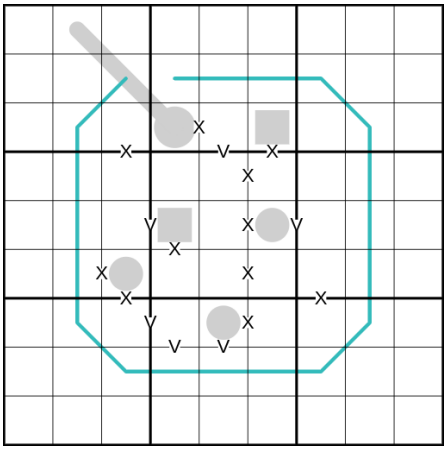
• *Quadruples:* Digits in a quadruple circle must be placed at least once in the four cells touching that circle.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/nhdgb82ldp`

Sudoku Soup

by 7ate9



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• *Even/Odd:* Cells marked with a grey square contain even digits. Cells marked with a grey circle contain odd digits.

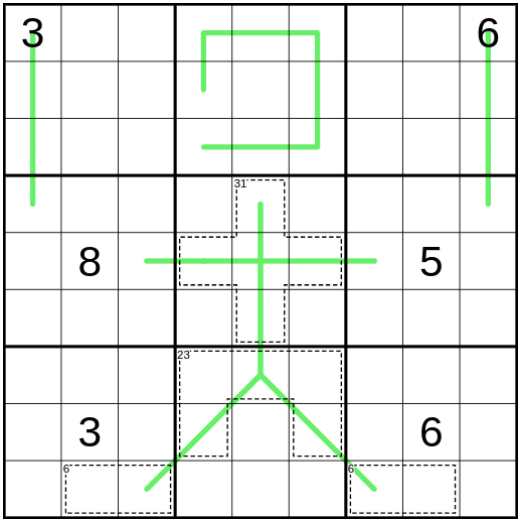
• *X and V Pairs:* Digits separated by a V must sum to 5. Digits separated by an X must sum to 10. Not all Xs and Vs are necessarily given.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/0nzals5w1w`

Man vs. Sudoku

by KingFish



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

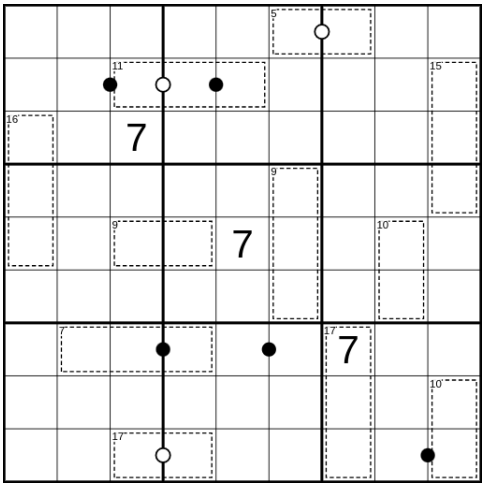
• *German Whispers:* Adjacent digits along a German Whispers line differ by at least 5.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/xqwg103drw`

Sneaky 7s

by Silver Lace and El Presidente



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Antiking:* Cells that are a chess king's move apart cannot contain the same digit.

• *Antiknight:* Cells that are a chess knight's move apart cannot contain the same digit.

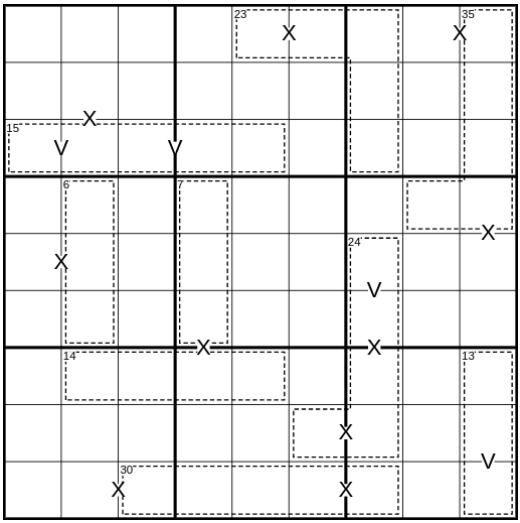
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/ccgrmt2t1p`

X & V's With Cages!

by Conejito



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

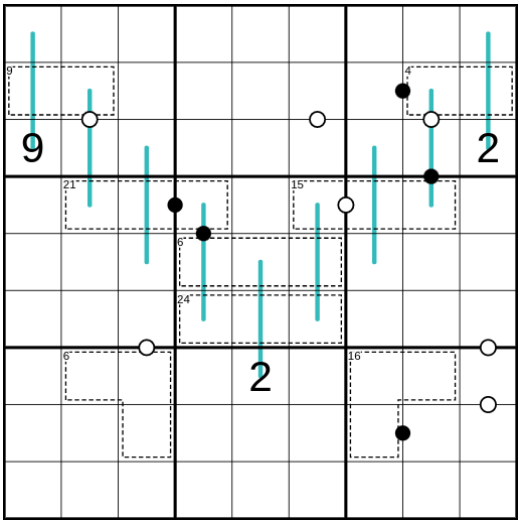
• *X and V Pairs:* Digits separated by a V must sum to 5. Digits separated by an X must sum to 10. Not all Xs and Vs are necessarily given.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/1wj16pinlt`

Tire Marks

by KingFish and LadyGrey



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

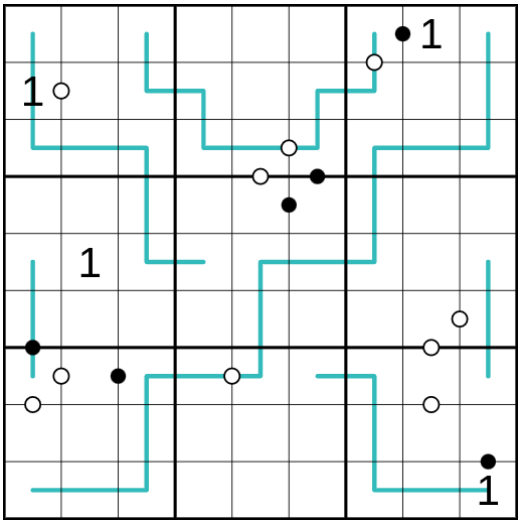
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

`https://sudokupad.app/t0f2s5ycn6`

Modular Man

by Silver Lace



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

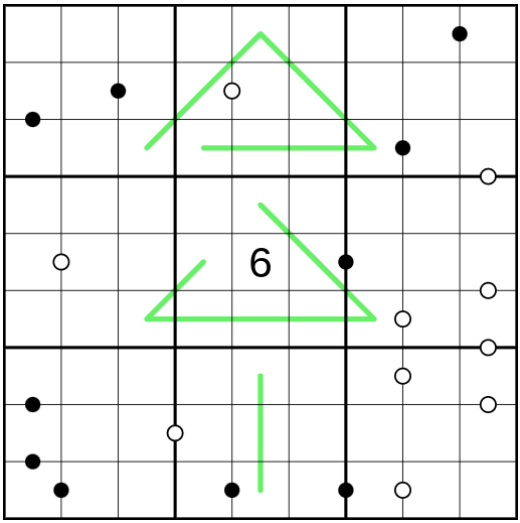
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

`https://sudokupad.app/tb3omcsvio`

Christmas Tree

by Qualter and xiaobudian



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

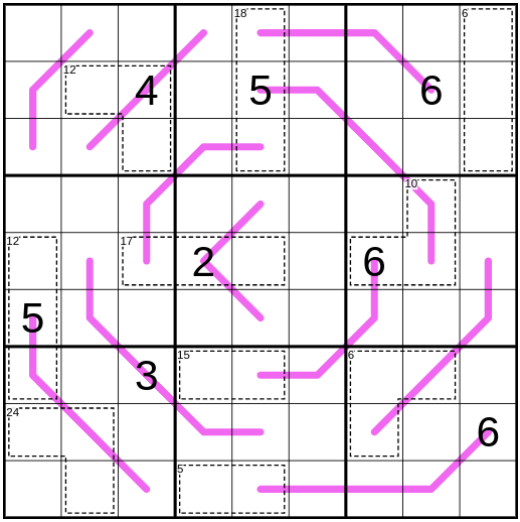
• *German Whispers:* Adjacent digits along a German Whispers line differ by at least 5.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/wg93tz9hnb`

It's the remix

by xiaobudian



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

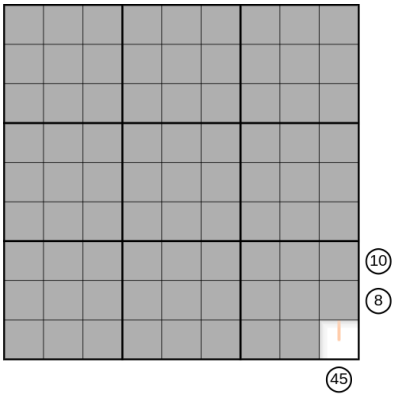
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Renban Lines:* Digits along a Renban line must form a set of non-repeating consecutive digits in any order.

`https://sudokupad.app/e9n2sb00k0`

Cherry Bomb

by La Lune



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Fog:* Part of the grid is covered with fog. As correct digits are placed, the fog will clear from surrounding cells.

• *Entropic Lines:* Any set of three adjacent cells along an entropic line must contain a low digit (123), a middle digit (456), and a high digit (789).

• *Column Indexing:* For cells that are highlighted red, if the cell (R, C) has value V then cell (R, V) has value C.

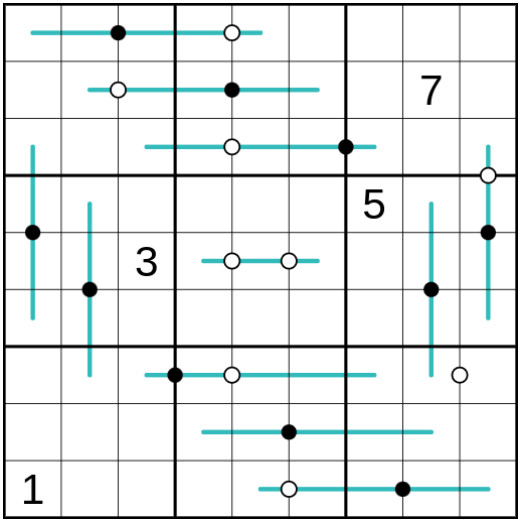
• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

• *X-Sums:* Numbers outside the grid indicate the sum of the first X digits in that row or column, where X is the first digit seen from the direction of the clue.

`https://sudokupad.app/prq442jk5j`

Modular Ladders

by Conejito



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

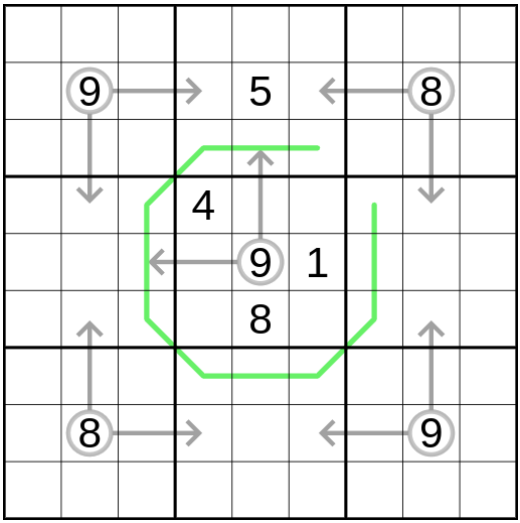
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

`https://sudokupad.app/cnveg5koyh`

9 O'Clock

by Qualter



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

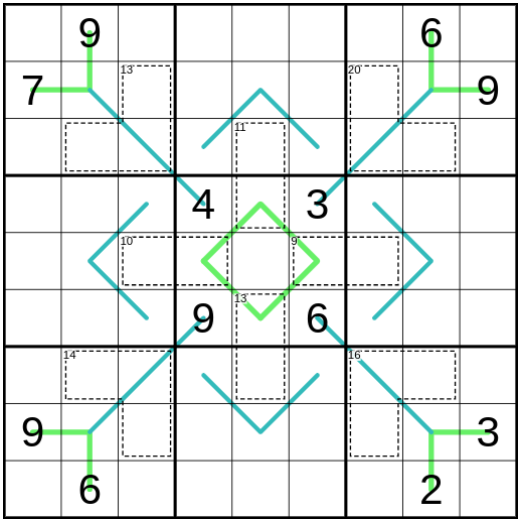
• *Arrows:* Digits along an arrow must sum to the number indicated in the circle from which the arrow emerges.

• *German Whispers:* Adjacent digits along a German Whispers line differ by at least 5.

`https://sudokupad.app/naek4cbf72`

Snowflake

by Hinsley, karl, and Raspberry Dime



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *German Whispers:* Adjacent digits along a German Whispers line differ by at least 5.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

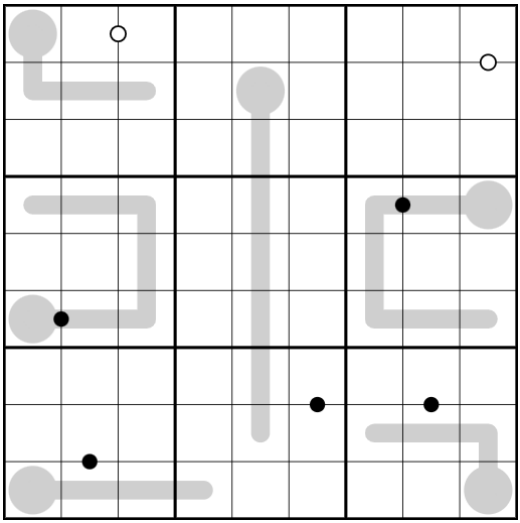
• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• Green lines are German whispers; blue lines are modular.

`https://sudokupad.app/fedknp4acs`

Snakes

by Mastrosetter and Trip Tup



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

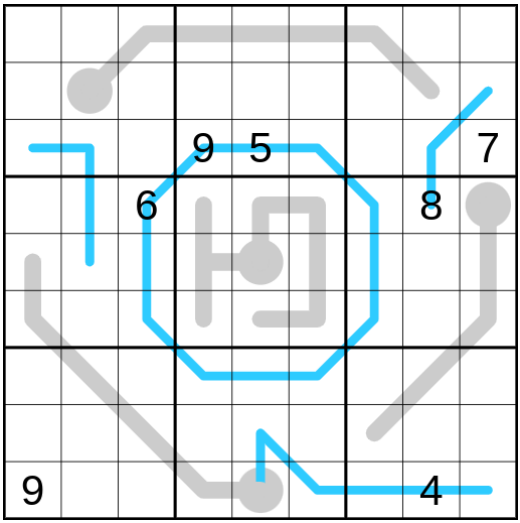
• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/g3rln1yps0`

Water Fountain

by Stine



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Antiking:* Cells that are a chess king's move apart cannot contain the same digit.

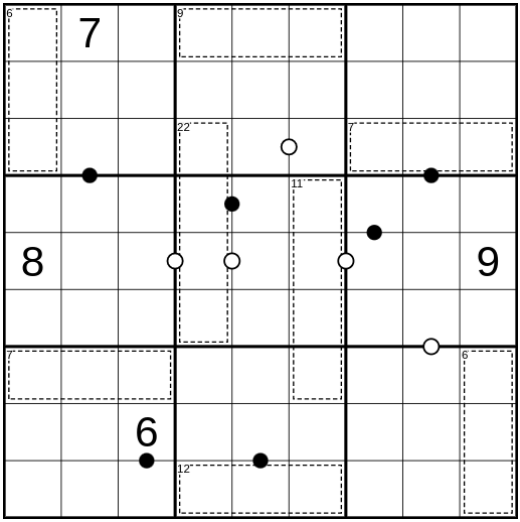
• *Region Sum Lines:* The sum of the digits on a region sum line within a particular region must be the same for all of the regions the line passes through.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/kqw9ea95zk`

Polka-Dot Maze

by Trip Tup and Conejito



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

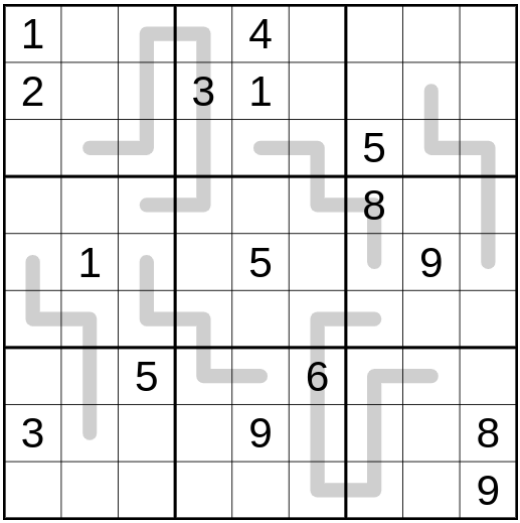
• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/1oqo03fdgd`

Blue Beret 5

by Café



Rules:

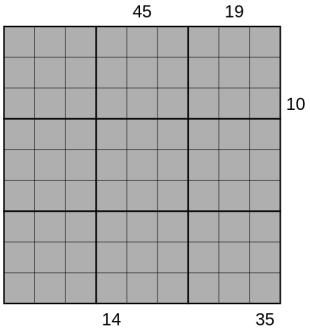
• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Palindromes:* Digits on a palindrome read the same forwards as backwards along the line.

`https://sudokupad.app/q647m0v1i9`

Glow Worms

by froggy



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Fog:* Part of the grid is covered with fog. As correct digits are placed, the fog will clear from surrounding cells.

• *X-Sums:* Numbers outside the grid indicate the sum of the first X digits in that row or column, where X is the first digit seen from the direction of the clue.

• *Palindromes:* Digits on grey line read the same forwards and backwards along the line.

• *Region Sum Lines:* The sum of the digits on a blue line within a particular region must be the same for all of the regions the line passes through.

• *Renban Lines:* Digits along pink line must form a set of non-repeating consecutive digits in any order.

• *German Whispers:* Adjacent digits along a green line differ by at least 5.

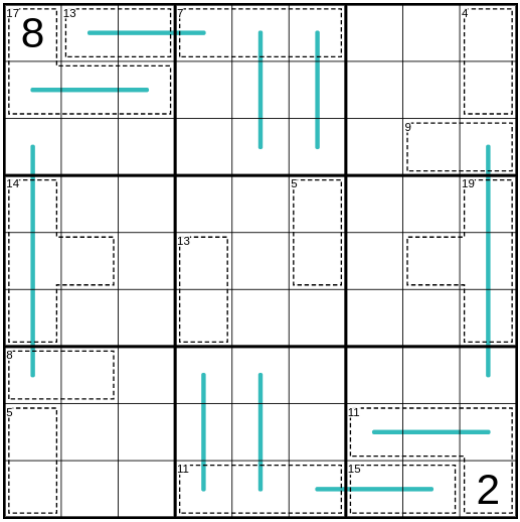
• *Consecutive Pairs:* Digits separated by a white dot are consecutive. Not all dots are necessarily given.

All lines in this puzzle continue straight at intersections and do not branch.

`https://sudokupad.app/1dff03p7yw`

BModW

by Orion and Qualter



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

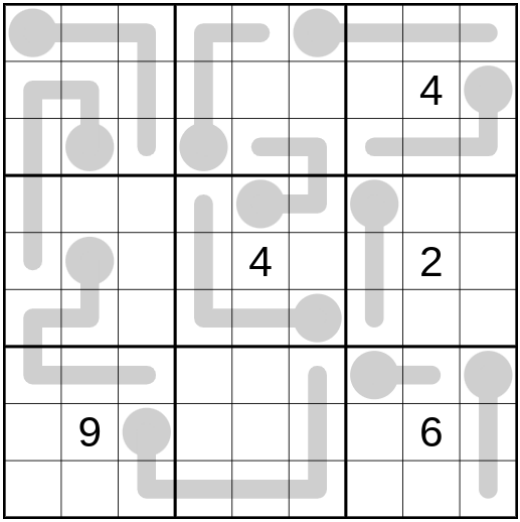
• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/g5aeilkduu`

Serpent's Labyrinth

by KingFish



Rules:

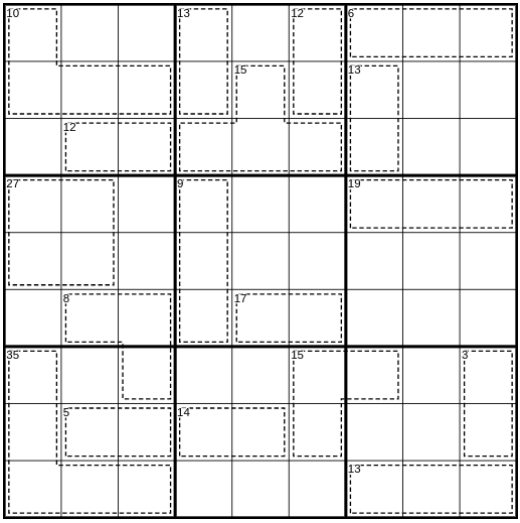
• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

`https://sudokupad.app/9sfg0cuek8`

Jail Break

by Qualter and Orion



Rules:

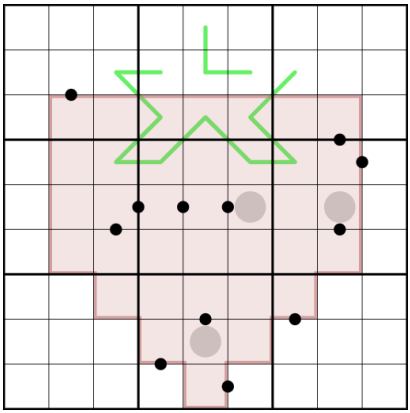
• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/pb1uq537p6`

Strawberry Fields Forever

by La Lune



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *German Whispers:* Adjacent digits along a German Whispers line differ by at least 5.

• *Column Indexing:* For cells that are highlighted red, if the cell (R, C) has value V then cell (R, V) has value C.

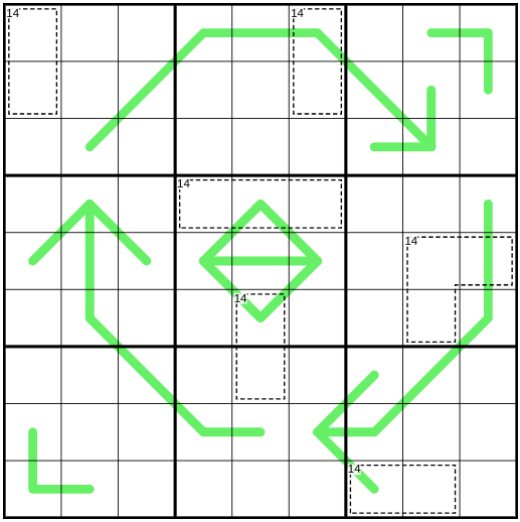
• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

• *Odd:* Digits in grey circles must be odd.

`https://sudokupad.app/dmpc8pr9ff`

Reduce, Reuse, . . .

by Stine



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

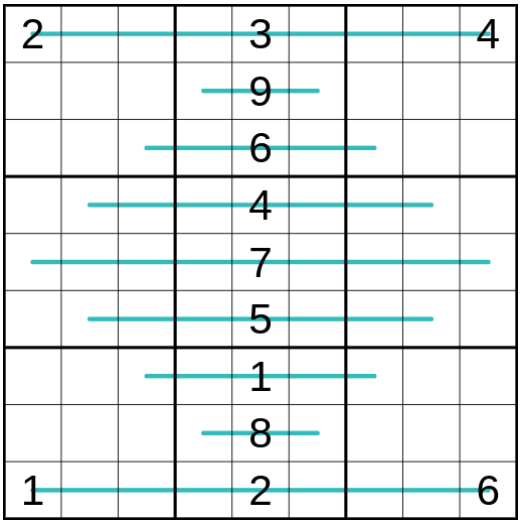
• *German Whispers:* Adjacent digits along a German Whispers line differ by at least 5.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/pbkk8qztcg`

Empire's Backbone

by KingFish and Qualter



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

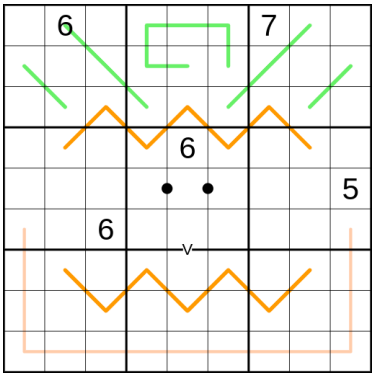
• *Non-consecutive:* Digits in orthogonally adjacent cells may not be consecutive.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

`https://sudokupad.app/qli2cu7wej`

Jack O'Lantern

by dilemma



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *German Whispers:* Adjacent digits along a green German Whispers line differ by at least 5.

• *Dutch Whispers:* Adjacent digits along an orange Dutch Whispers line differ by at least 4.

• *Entropic Lines:* Any set of three adjacent cells along a peach entropic line must contain a low digit (123), a middle digit (456), and a high digit (789).

• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

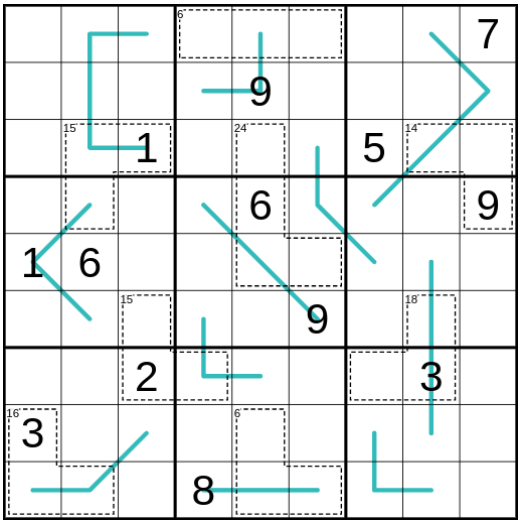
• *V Pairs:* Digits separated by a V must sum to 5. Not all possible Vs are necessarily given.

• *Accessibility note:* The Dutch Whispers are zigzags; the entropic line extends across all of row 9 and up into boxes 4 and 7.

`https://sudokupad.app/4ztjxug16p`

Mid-Mod

by El Presidente and Silver Lace



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

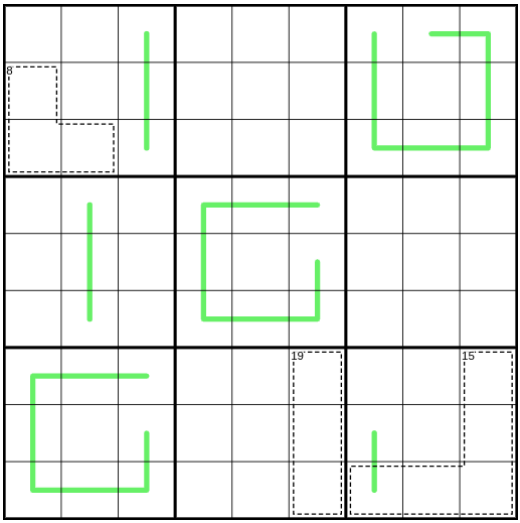
• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/oae3gfosr1`

Inside the Lines

by Qualter



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

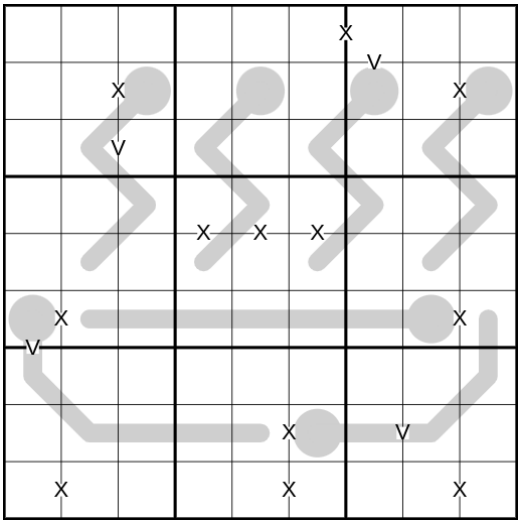
• *German Whispers:* Adjacent digits along a German Whispers line differ by at least 5.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/k6uatq12wv`

Add Noodles Please 2.0

by xiaobudian



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

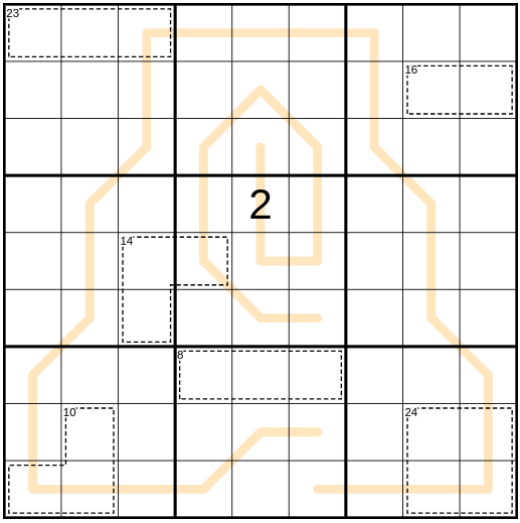
• *X and V Pairs:* Digits separated by a V must sum to 5. Digits separated by an X must sum to 10. Not all Xs and Vs are necessarily given.

Note: An easier version of this puzzle appears on Page 47.

`https://sudokupad.app/vm16ajh70i`

Sandbending

by Stine



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

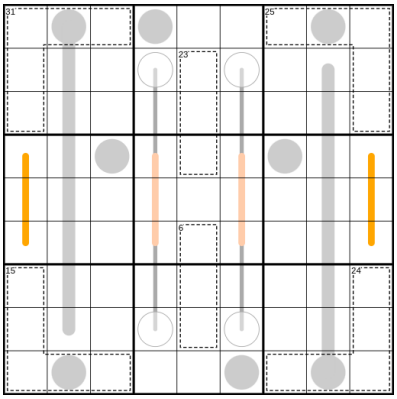
• *Entropic Lines:* Any set of three adjacent cells along an entropic line must contain a low digit (123), a middle digit (456), and a high digit (789).

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

`https://sudokupad.app/yugq361e8n`

BUSTED!

by Lumos & Glitch Horse



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Cages:* Digits in cages cannot repeat and must sum to the value shown in the upper left corner of the cage.

• *Thermometers:* Digits on Thermos are strictly increasing from bulb to tip.

• *Between Lines:* Digits placed on Between Lines must be strictly between the digits placed in the circles at the ends of those lines.

• *Dutch Whispers:* Adjacent digits along an orange Dutch Whispers line differ by at least 4.

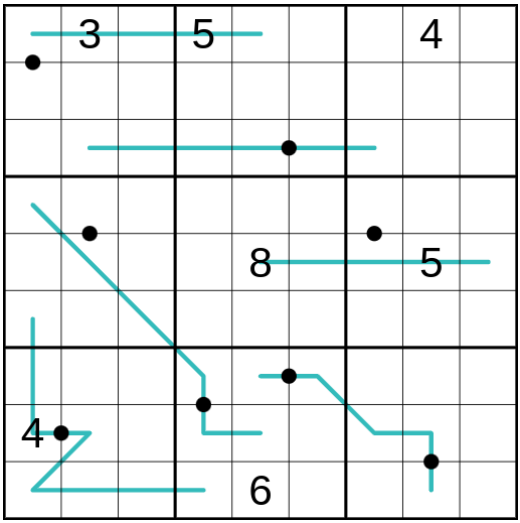
• *Odd:* Digits in grey circles must be odd.

• *Entropic Lines:* Any set of three adjacent cells along a peach entropic line must contain a low digit (123), a middle digit (456), and a high digit (789).

`https://sudokupad.app/2ba2x8uq25`

Good Luck

by Raspberry Dime, Hinsley, karl, and 591



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

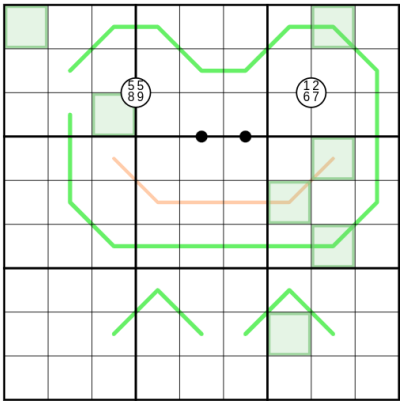
• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

`https://sudokupad.app/qz5g4fjqkx`

Peace Frog

by La Lune



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *German Whispers:* Adjacent digits along a green German Whispers line differ by at least 5.

• *Row Indexing:* Shown as green boxes, if the cell (R, C) has value V then cell (V, C) has value R.

• *Quadruples:* Digits in a quadruple circle must be placed at least once in the four cells touching that circle.

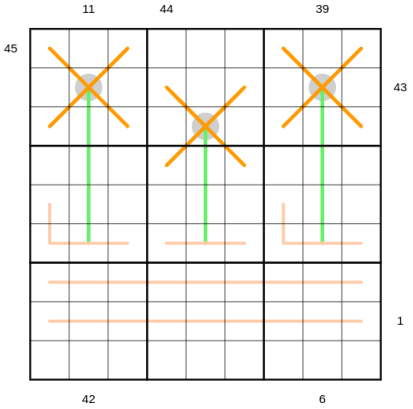
• *Entropic Lines:* Any set of three adjacent cells along a peach entropic line must contain a low digit (123), a middle digit (456), and a high digit (789).

• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

`https://sudokupad.app/kf90fgjxqr`

Peach Blossom Boogy

by La Lune



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *German Whispers:* Adjacent digits along a green German Whispers line differ by at least 5.

• *Dutch Whispers:* Adjacent digits along a Dutch Whispers line differ by at least 4. The Dutch Whisper lines are the flower petals.

• *Odd:* Digits in grey circles must be odd.

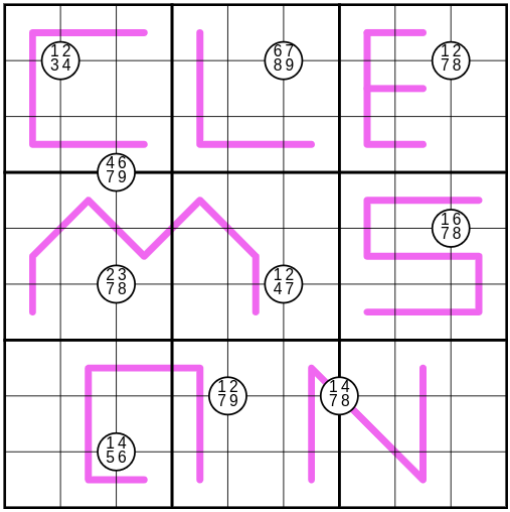
• *Entropic Lines:* Any set of three adjacent cells along a peach entropic line must contain a low digit (123), a middle digit (456), and a high digit (789).

• *X-Sums:* Numbers outside the grid indicate the sum of the first X digits in that row or column, where X is the first digit seen from the direction of the clue.

`https://sudokupad.app/0rpxcps2zy`

Tiger Tetrad

by Qualter



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

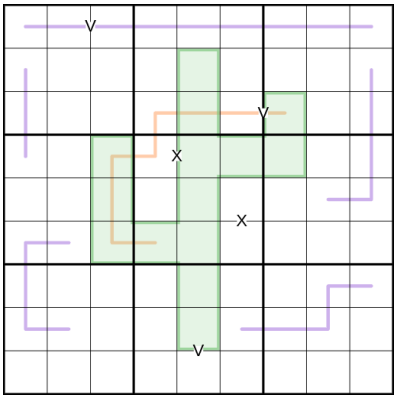
• *Renban Lines:* Digits along a Renban line must form a set of non-repeating consecutive digits in any order.

• *Quadruples:* Digits in a quadruple circle must be placed at least once in the four cells touching that circle.

`https://sudokupad.app/yafq8xp4oy`

Cinco de Mayo

by 7ate9



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Row Indexing:* Shown as green boxes, if the cell (R, C) has value V then cell (V, C) has value R.

• *Entropic Lines:* Any set of three adjacent cells along a peach entropic line must contain a low digit (123), a middle digit (456), and a high digit (789).

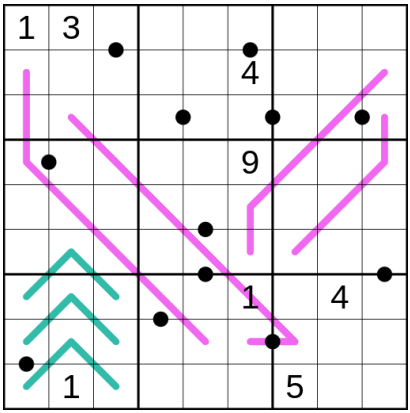
• *Zipper Lines:* Along lavender Zipper lines, pairs of digits equidistant from the center of the line have the same sum. For Zipper lines of odd length, that sum is the central digit on the line.

• *X and V Pairs:* Digits separated by a V must sum to 5. Digits separated by an X must sum to 10. Not all Xs and Vs are necessarily given.

`https://sudokupad.app/qg4z6lzl36`

Valo

by Stine



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Antiking:* Cells that are a chess king's move apart cannot contain the same digit.

• *Renban Lines:* Digits along a Renban line must form a set of non-repeating consecutive digits in any order.

• *Ratio Pairs:* Digits separated by a black dot are in a 1:2 ratio. Not all dots are necessarily given.

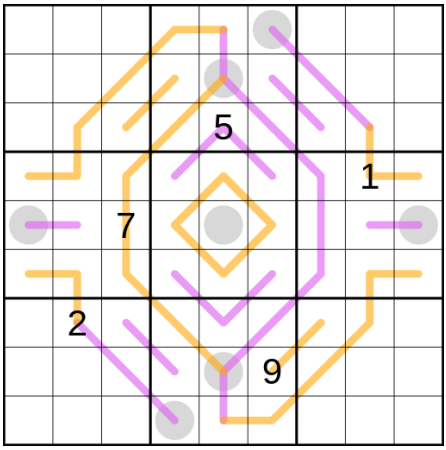
• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• *Clarification:* Renban lines are purple and Modular lines are teal.

`https://sudokupad.app/n7t0vu6nam`

Combustion

by Stine



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Antiking:* Cells that are a chess king's move apart cannot contain the same digit.

• *Dutch Whispers:* Adjacent digits along a Dutch Whispers line differ by at least 4.

• *Renban Lines:* Digits along a Renban line must form a set of non-repeating consecutive digits in any order.

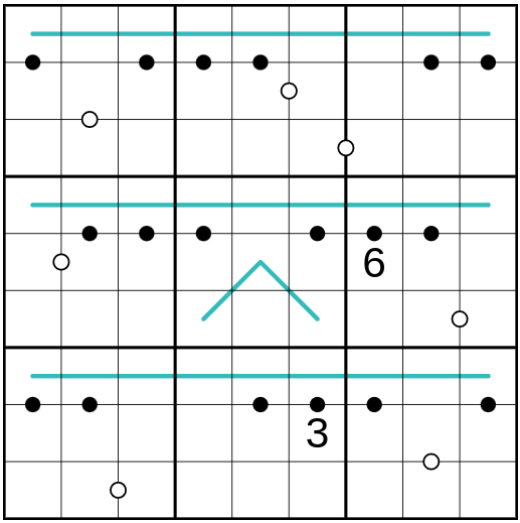
• *Odd:* Digits in grey circles must be odd.

• *Clarification:* Renban lines are purple and Dutch Whisper lines are orange.

`https://sudokupad.app/bf97aq2b98`

Boulder Grip

by Café



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

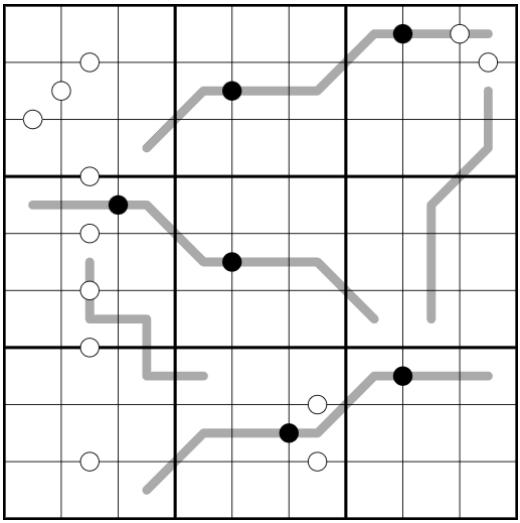
• *Modular Lines:* Any set of three adjacent cells along a Modular line must contain digits with three different remainders when divided by 3.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/07a8hq6ddu`

That seems like a lot of work

by Nash, Lumos, and Glitch Horse



Rules:

• *Standard sudoku rules apply:* The digits 1 through 9 appear in every row, column, and box.

• *Palindromes:* Digits on a palindrome read the same forwards as backwards along the line.

• *Kropki Pairs:* Digits separated by a black dot are in a 1:2 ratio. Digits separated by a white dot are consecutive. Not all dots are necessarily given.

`https://sudokupad.app/922k0t2g57`

Cryptic Crosswords

In addition to variant sudoku, the class also learned about cryptic crosswords. A cryptic crossword clue involves both a straight clue such as you might find in a typical New York Times crossword puzzle, and also word play. The class collaboratively set an 11×11 cryptic crossword puzzle by first choosing a theme, then building a solution grid including words from that theme, then constructing and testing cryptic clues for each answer word.

After the puzzle and clues, we provide explanations for each answer so that new solvers can see how the word play and the straight clue each contribute to the solution. If you are new to cryptic crosswords and want to try some more clues, we recommend

`www.minutecryptic.com`

and their associated explanations on YouTube at

`https://www.youtube.com/@MinuteCryptic`

If you are looking for explanations of harder full puzzles, we recommend Cracking the Cryptic:

`https://www.youtube.com/@CrackingTheCryptic`

where they take on the Friday puzzle from *The Times* each week.

There are also many other good puzzle sources and explanations, including:

- *The Guardian*'s guide to cryptic crosswords for beginners:

  `https://www.theguardian.com/crosswords/crossword-blog/2024/oct/21/how-to-solve-cryptic-crosswords-the-ultimate-beginners-guide`

- An "easy" daily cryptic crossword puzzle:

  `https://simplydailypuzzles.com/daily-cryptic/`

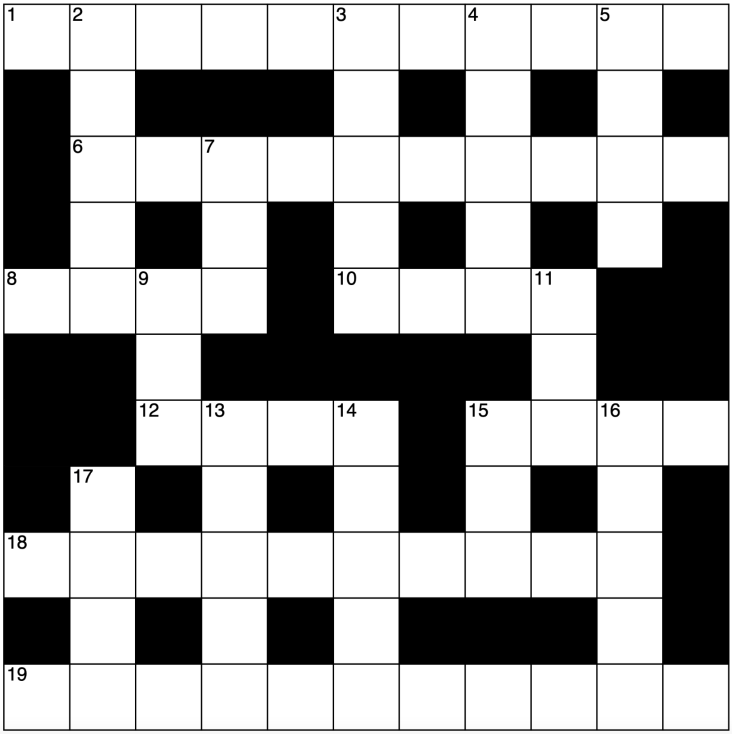
- A cryptic tutorial and daily puzzle:

  `https://lovattspuzzles.com/online-puzzles-competitions/daily-cryptic-crossword/`

Happy solving!

Cryptic Crossword

by Puzzles Class Fall 2024



tinyurl.com/2070puzzleF24

Across Clues

1 Kitchen aids left genetic material in awkward nap spots (4,3,4)
6 Shrew cracked up after gossip about a bubble dancer (10)
8 Start baking ricotta into exquisite cheese (4)
10 Chewy balls left out hunk of meat (4)
12 Super confused rube (4)
15 Roll up, leading with renegades and punks (4)
18 Potter lost time eating cane dumpling (10)
19 Starter: tomato basil soup, pulled out to measure (11)

Down Clues

2 Lord Eric imprisons Knights Templar (5)
3 Amphibians travel North-West (5)
4 Noodles in soup: a star! (5)
5 Demand massage on the telephone (4)
7 Upset user without right to take legal action (3)
9 Hospital department opening in Clemson University (3)
11 Law exam begins by antagonizing readers (3)
13 Held in sob as I lamented Herb (5)
14 Charles and Camilla's proclamation stirs the pot (5)
15 Work without right pan (3)
16 Baking protection confused an expert (5)
17 Stinky art major's chewy balls (4)

Cryptic clue answers and explanations

1A Kitchen aids left genetic material in awkward nap spots (4,3,4)
Straight clue: “Kitchen aids”
Word play: “Left” is a reversal indicator (since this is an across clue) applied to DNA (a short word for “genetic material”). The word “in” tells us to insert AND (reversal of DNA) into an anagram of NAP SPOTS.
Answer: POTS AND PANS

6A Shrew cracked up after gossip about a bubble dancer (10)
Straight clue: “bubble dancer,” a slang term for a person who washes dishes in a restaurant.
Word play: “Cracked up” is an anagram indicator applied to SHREW. “After” tells us to place those rearranged letters following a word for “gossip,” which is DISH and “about” (around) the letter A.
Answer: DISHWASHER

8A Start baking ricotta into exquisite cheese (4)
Straight clue: “cheese”
Word play: "Start" is an initialism indicator, telling us to take the first letters of “baking,” “ricotta,” “into,” and “exquisite,” or B R I E.
Answer: BRIE

10A Chewy balls left out hunk of meat (4)
Straight clue: “hunk of meat” **Word play:** “Chewy” is an anagram indicator, and the anagram fodder is BALLS. From the anagram fodder we have an L (for "left") out (removed). That means we anagram just the letters BALS.
Answer: SLAB

12A Super confused rube (4)
Straight clue: “super”
Word play: UBER: ”confused” is an anagram indicator and the fodder for the anagram is RUBE.
Answer: UBER

15A Roll up, leading with renegades and punks (4)
Straight clue: "roll up"
Word play: "leading" is an initialism indicator, telling us to take the first letters of each of the words "with," "renegades, "and," and "punks," or W R A P. **Answer:** WRAP

18A Potter lost time eating cane dumpling (10)
Straight clue: "dumpling"
Word play: "lost time" tells us to drop (lose) the letter T (an abbreviation of "time" from the word "potter," leaving POTER. "Eating" tells us that POTER is wrapped around (eats) STICK (a synonym of "cane").
Answer: POTSTICKER.

19A Starter: tomato basil soup, pulled out to measure (11)
Straight clue: "measure" (as a noun)
Word play: "Starter" is an initialism, telling us to use the first letters of "tomato," "basil," and "soup," or T B S. "Pulled out to" tells us to expand the abbreviation of TBS. **Answer:** TABLESPOONS

2D Lord Eric imprisons Knights Templar (5)
Straight clue: "Knights Templar"
Word play: "imprisons" is a hidden word indicator telling us to look for a string of letters in "Lord Eric" to find a word: lo(ORDER)ic. **Answer:** ORDER (the Knights Templar are a military order)

3D Amphibians travel North-West (5)
Straight clue: "amphibians"
Word play: "travel" is an anagram indicator; the anagram fodder is N WEST.
Answer: NEWTS

4D Noodles in soup: a star! (5)
Straight clue: "noodles"

Word play: "in" is a hidden word indicator telling us to look for a string of letters in "soup: a star!" to find a word: "sou(PASTA)r"
Answer: PASTA

5D Demand massage on the telephone (4)
Straight clue: "Demand"
Word play: "on the telephone" is a homophone indicator. Another word for "massage" is KNEAD, which has NEED as a homophone.
Answer: NEED

7D Upset user without right to take legal action (3)
Straight clue: "to take legal action"
Word play: "Upset" is an anagram indicator. The fodder is "user" but "without right" tells us to remove an R (an abbreviation of "right") from the fodder. That leaves USE as the anagram fodder.
Answer: SUE

9D Hospital department opening in Clemson University (3)
Straight clue: "Hospital department"
Word play: "opening" is an initialism indicator, telling us to take the first letters of each of the words "in," "Clemson," and "University," or I C U.
Answer: ICU

11D Law exam begins by antagonizing readers (3)
Straight clue: "law exam"
Word play: "begins" is an initialism indicator telling us to use the first letters of each of the words "by," "antagonizing," and "readers," or B A R.
Answer: BAR

13D Held in sob as I lamented Herb (5)
Straight clue: "Herb"
Word play: "Held in" is a hidden word indicator telling us to

look for a string of letters inside "sob as I lamented" to find a word: so(BASIL)amented.
Answer: BASIL

14D Charles and Camilla's proclamation stirs the pot (5)
Straight clue: "stirs the pot"
Word play: "Proclamation" is a homophone indicator. Charles and Camilla are ROYALS, which has a homophone of ROILS.
Answer: ROILS

15D Work without right pan (3)
Straight clue: "pan"
Word play: "without right" tells us to remove R, an abbreviation of "right" from the word WORK.
Answer: WOK

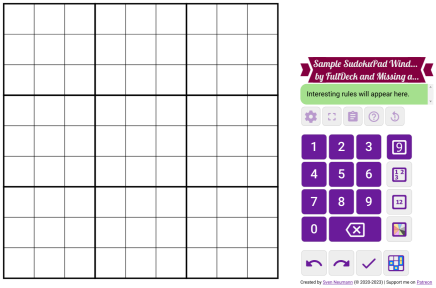
16D Baking protection confused an expert (5)
Straight clue: "baking protection"
Word play: "confused" is an anagram indicator. The anagram fodder is AN plus PRO, another word for expert.
Answer: APRON

17D Stinky art major's chewy balls (4)
Straight clue: "chewy balls"
Word play: "Stinky" indicates BO (body odor) and an art major is a BA (bachelor of arts).
Answer: BOBA (the chewy tapioca balls in boba tea)

Solving Online

There are a number of online tools for setting and solving variant sudoku. Our favorite platform for solving is Sven Neumann's SudokuPad. It is browser independent but works better on a laptop or tablet than on a cell phone. Online solving allows for a variety of annotations to the grid which enable the solver to keep track of information and deductions. It also allows the solver to backtrack, check digits, and get confirmation of a correct solution. Each puzzle in this book provides a short link to play online in SudokuPad. Sven is constantly improving SudokuPad, so the images we provide below may be slightly different than what you see, but the functionality will be similar.

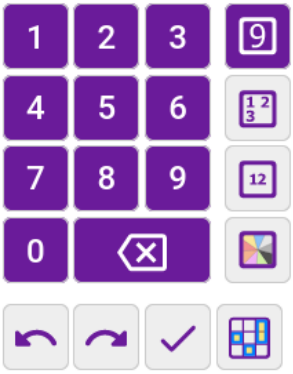
When you open a puzzle in SudokuPad you'll see a browser window with the puzzle grid on the left.



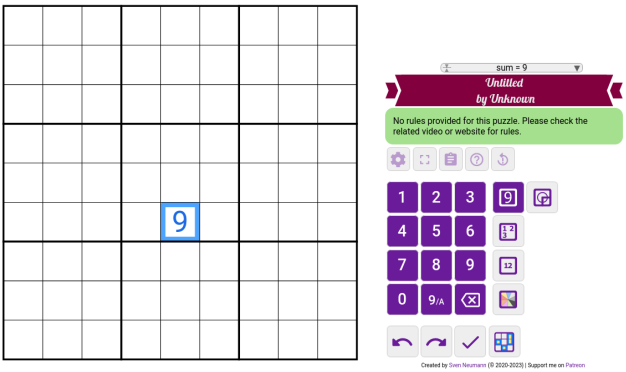
On the right you will find several panels. The top panel includes information about the puzzle: title, author, and rules. Below are tools for interacting with the grid. To the right of a number pad are four options: a large digit (for placing digits in the grid), a set of three small digits in corners (for corner marking digits), a set of two small digits in the center (for center marking digits), and a colour wheel (for colouring cells in the grid). These tools can help you keep track of information you have deduced about possible values. Below the number pad are arrows for backtracking (and then moving forward again) and a checkmark for seeing whether digits you have placed so far are correct or not. Above the number pad, to the left, is a cog button that opens the settings window where you can customize your solving experience. Below, we talk more about how to use these features to improve your solving experience.

Placing digits

The most basic task in solving a sudoku puzzle is entering correct digits. This is done by clicking on the place digits button



then clicking on a cell in the grid and either typing a digit or clicking on the appropriate digit in the number pad. We sometimes refer to digits placed in this way as “big digits.”



Centermarks and Cornermarks

When you are solving a sudoku puzzle, whether online or on paper, it's often helpful to ask yourself two important questions:

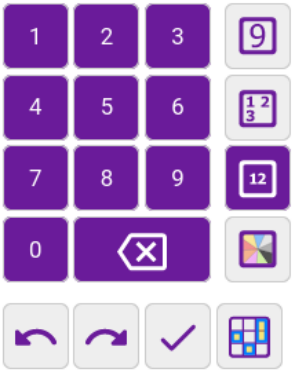
What values can possibly be placed in this cell?

Where can digit X possibly be placed in this box?

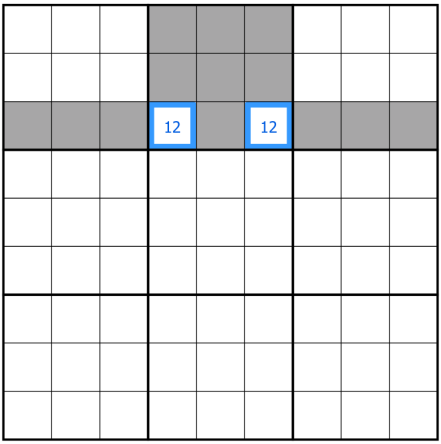
There are lots of other good questions, but these are the two that correspond to using center and corner marks.

Centermarks

If you can narrow down the values which can be placed in a single cell to just a couple of choices, it is useful to keep track of this by centermarking those values in the cell. Select the centermark button (the one with two small digits in the center):

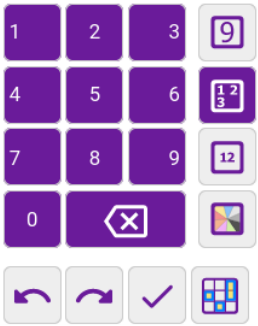


then enter the digits. Sometimes you will find that you have two cells in a box with the the same two digits center marked: this is useful because it rules out those digits from anywhere else in the box. Similarly two cells with the same pair of centermarks in a row, or in a column, rule out those digits in the rest of that row or column. In this grid, none of the shaded cells can be 1 or 2 because the 1 and 2 are used up in box 2 and in row 3.

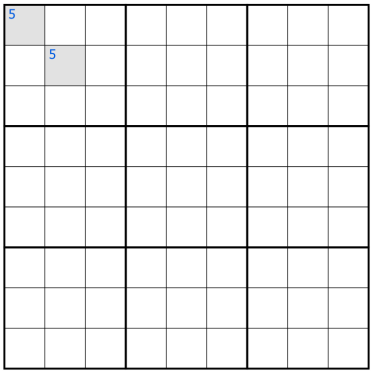


Cornermarks

If you can narrow down the possible positions of a particular digit in a box, you can place that digit as a cornermark in those cells. Select the cornermark option (the one with three small digits in corners):

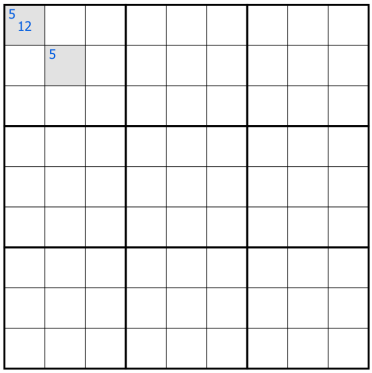


then place the digits in the possible locations within the box. We usually only do this if the digit is restricted to two, or occasionally three, possible positions. This is useful because of the interaction between center- and cornermarks. For example, if you've been able to cornermark 5's in r1c1 and r2c2, (so that those are the only cells in box 1 where 5's could possibly go)

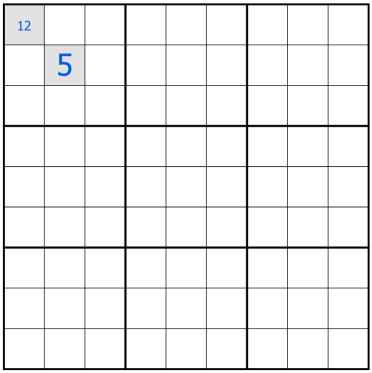


and subsequently can centermark 1 and 2 as the only digits which

can possibly be placed in r1c1



then the elimination of the centermarked 5 in that cell means that r2c2 *must* be a 5.



Check digits

If the puzzle you are solving has an embedded solution (as is the case for all of the puzzle in this book) and you have placed "big digits," you can reassure yourself that you have not made a mistake by clicking on the check mark below the number pad:

A window will pop up telling you that the puzzle is not finished, but that the digits you have placed are correct. Of course, if they are *not* correct, it will tell you that, too!

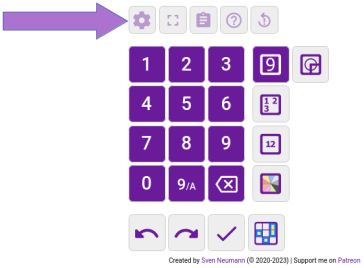
Undo and Redo

If you do discover that you have made an error, you may wish to rewind your work in the puzzle until you reach a point where you know your work is correct. SudokuPad makes that easy! Under the number pad, there are "Undo" and "Redo" buttons.

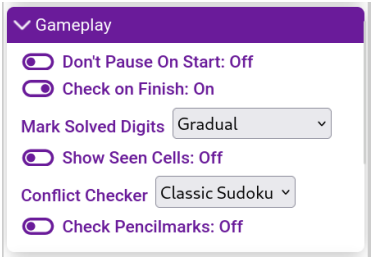
Each click of the "Undo" button (counter-clockwise arrow) goes back one step in the puzzle state. Each click of the "Redo" button advances the puzzle state one step to the furthest point in your solve. Watch out, though! If you undo to an earlier point in the puzzle, then make a new deduction, you will be starting a new branch in the timeline and will only be able to go back and forth along that branch.

Conflict Checking

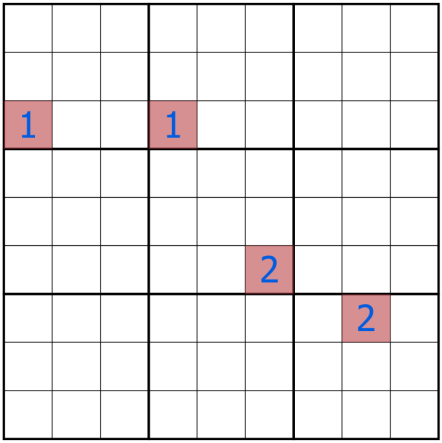
In SudokuPad, you can customize how much help you want in spotting errors and eliminations in your pencilmarks. To change these settings, click the cog button above the number pad.



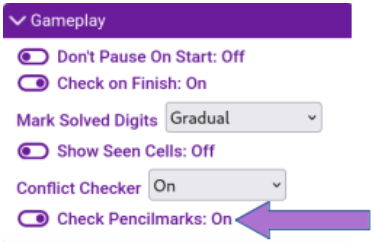
Under the "Game Play" tab, there are three settings for the Conflict Checker: *On*, *Classic Sudoku*, and *Off*.



If either *On* or *Classic Sudoku* is selected and you try placing a big digit in a cell which conflicts with other big digits already placed in the same row, column, or box, the conflicting digits will be highlighted. This can be particularly helpful if you accidentally mistype a digit and fail to notice it at the time. The *Classic Sudoku* setting only checks for conflicts in rows, columns, and boxes. The *On* setting also checks for conflicts arising from added constraints. For example, in a puzzle with an antiknight constraint, the grid below would show conflicting digits for both the 1's (same row) and 2's (antiknight) if conflict checking is set to *On* but would only show the conflict with 1's (same row) if conflict checking is set to *Classic Sudoku*.



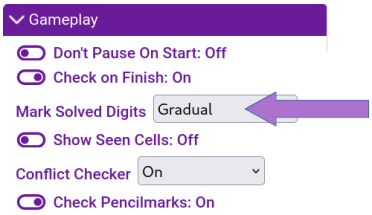
Still under the "Game Play" tab, you can also toggle between having "Check Pencilmarks" on or off:



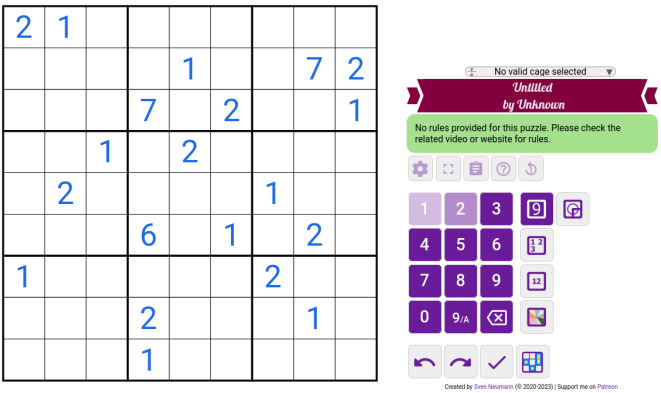
With "Check Pencilmarks" set to *Off*, only big digits are checked for conflicts. With "Check Pencilmarks" set to *On*, centermarks and cornermarks are also checked.

Marking Solved Digits

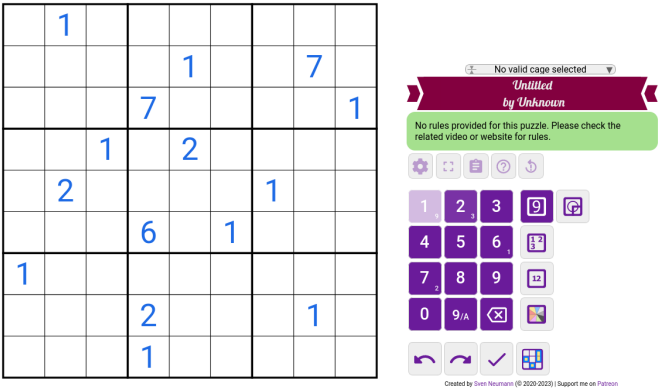
Near the end of the puzzle, it can be useful to know which digits are left to place. Under the Gameplay tab you can turn on "Mark Solved Digits."



This tool has four settings: *On*, *Gradual*, *Count*, and *Off*. When set to *On*, digits are greyed out on the number pad once all instances of that digit have been placed (correctly or incorrectly) in the grid. When set to *Gradual*, digits are greyed out proportional to how many remain to be placed.



When set to *Count*, digits are greyed out once all instances have been placed. In addition, a small number in the lower right corner of each digit on the number pad tells you how many of that digit have already been placed in the grid:

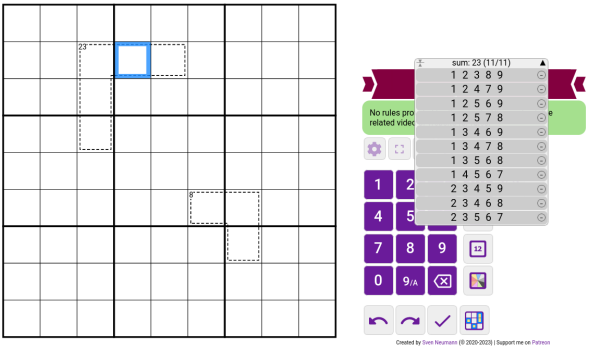


Cage Calculator

In "killer cages" the number in the corner of the top left cell of the cage indicates the sum of the digits in the cage. If you would prefer not to have to keep mental track of all the possible combinations for a particular sum, you can choose to use the built-in cage calculator in SudokuPad. Under the "Advanced" tab in the settings window you can turn on a Killer Calculator:

The Killer Calculator enables a pulldown list of all the possible combinations of digits that sum to a given total. Until you click on a cage in the puzzle, the calculator shows up above the puzzle title as "No Valid Cage Selected."

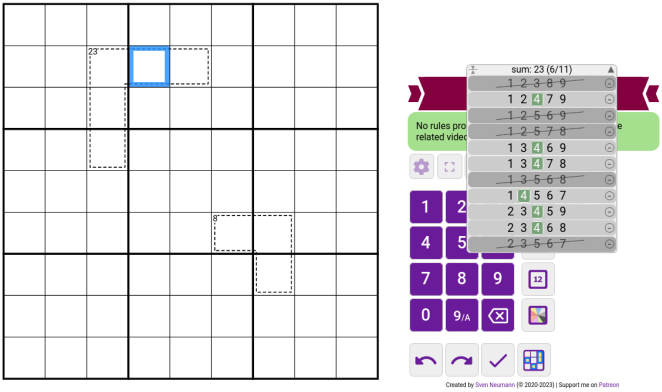
Once you click on a cell within a cage, the cage calculator shows you how many combinations of digits are possible; clicking on the arrow in the cage calculator panel drops down a list of all possible combinations.



Clicking on a single digit in the list toggles through three states:

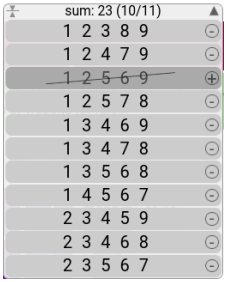
The digit MUST be in the cage.
The digit CANNOT be in the cage.
We don't know whether the digit is in the cage.

With each option, the list of possible combinations will be updated. For example, if we know 4 MUST BE in the 23-cage in this grid, we click on "4" once in the list and discover that we now have only six possible combinations.



You can also click on the "−" sign to the right of a possible combination to eliminate it from the list; it will be greyed out and struck through. To rule that combination back into contention, just click on

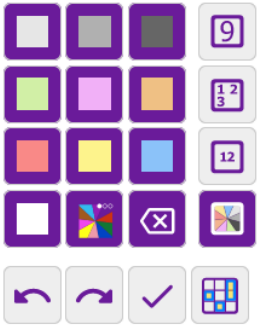
the “+” sign.



Sometimes the calculator automatically eliminates choices. For example, if you have placed a digit in the cage, all combinations that do not contain that digit are eliminated.

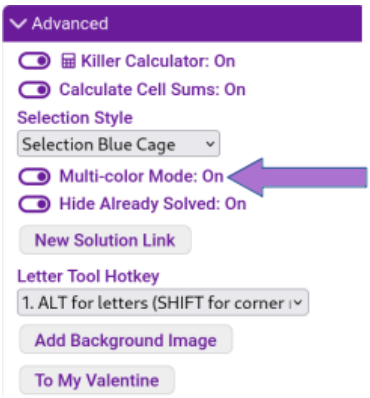
Colours

The colour wheel lets you add colour to cells as an aide to keeping track of intermediate deductions.



This is particularly helpful if a puzzle is built around keeping track of parity (which cells contain even digits and which contain odd digits), entropy (low, middle, and high digits), or 3-modularity (remainder when a digit is divided by 3). With German Whispers, for example, it is very common to keep track of whether digits along a whisper line are low (1234) or high (6789). If you need to keep track of

multiple colours within a single cell, you can select that option in the "Advanced" section of the Settings menu.



Other Options

Other advanced options we frequently use include letter mode (allowing both upper and lower case letters in the grid) and a pen tool. These can be toggled on/off in the settings window. Sven Neumann is actively developing SudokuPad and often introduces new features. Explore and enjoy!

Acknowledgements

The variant sudoku community is filled with wonderful people, many of whom have become good friends, whether we have met in person or not. We have attempted to list many of these friends who have been particularly important since the last volume, as well as individuals without whom the community would not exist, in this partial list of fabulous sudoku enthusiasts. To those we've left off, we apologize profusely.

Blobz

BremSter

Cracking the Cryptic
(Simon Anthony and Mark Goodliffe)

Cris Moore

Damasosos

Derektionary

Dream Librarian

Dumediat

f-puzzles.com
(AfrayedKnot and previously Eric Fox)

Fool on Hill

Fraπ

GAS Team
(Clover, Philip Newman, Bill Murphy, Sam Cappleman-Lynes)

Gliperal

grkles and GabeyK9

James W. Sinclair and Artisanal Sudoku

JC Godart

Jeremy Dover

Maggie

Memeristor

Panthera

Prof Meow

Rangsk

Raumplaner

Rockratzero

Sirxemic and sudokumaker.app

Skunkworks
(and Riffclown in particular)

SudokuCon

Sujoyku

Sven Neumann and SudokuPad

Tantan Dai

timotab and FastSandals

Towandaa

Virtual

zetamath

We are grateful to the many YouTube puzzle streamers who take their time to showcase variant sudoku puzzles and the logic involved in solving them. We encourage the reader to seek out these channels, and we apologize to anyone we have inadvertently left off this list.

24gas5
BremSter Puzzles
Chatty Kathy
Clay Loves Logic
Colin Pedicini – puzzled
cornishjohn
Cracking the Cryptic
Crusader Puzzles
Frank Puzzles
Genuinely Approachable Sudoku
JC Godart Sudoku
JohnDave Spaghetti (Sudoku Sauce)
Logic Lemur Gaming
Lucian's Place
Magic Owls
Memeristor
Michael's Miscellaneous Media
Puzzlelith
Puzzle Patzer
Puzzles Pundit
Puzzling with Chord
Rangsk
Scott Stro-solves
Solver Tom
Stumbling Around
Sudofrou
SudoKanard
Sudoku Sleuth
SudokuCon
timotab
Unshackling Sudoku
Wenchang Lu
zetamath does puzzles

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