MYSTERY HUNT PUZZLE CLUB

Instruction Booklet

Logic Puzzle Open

April 22, 2023 • 10 AM – 5 PM • 3-270

10:00 AM – 10:50 AM	**Round 1: "Pop Culture"** *Sudoku, Numberlink, Minesweeper, TomTom, Scrabble, Hidato*
11:00 AM – 11:50 AM	**Round 2: Numberless** *Midloop, Icebarn, Voxas, Guide Arrow, Star Battle, Double Domino*
12:00 PM – 12:50 PM	Lunch Break
1:00 PM – 1:50 PM	**Round 3: Powerhouses** *Fillomino, Statue Park, Slitherlink, Tapa, Double Choco, Akari*
2:00 PM – 2:50 PM	**Round 4: Underrated Genres** *Number Rope, Square Jam, Creek, Entry Exit, Choco Banana, FourCells*
3:00 PM – 3:50 PM	Constructor Q&A and Contestant Social
4:00 PM – 4:15 PM	Awards

Competition Rules

Let us know if you find anything wrong in this instruction booklet or want any clarifications.

You'll be given full points for a correctly solved puzzle. We may decide to give partial points for substantial progress.

Puzzles that took testsolvers longer to solve are worth more points. But it's not always linear: a puzzle that took thrice as long might not be worth thrice as much.

A correct solution follows all the rules for that puzzle. Each puzzle has a unique correct solution. You don't need to use this fact to solve any of the puzzles, but you can if it helps.

You can have pens, pencils, sharpeners, erasers, rulers, blank papers, and a copy of this instruction booklet. We'll have extras for all of these, but don't rely on them. We won't print a copy of the full booklet for everyone, but we will print a copy of pages 15–16.

Puzzle booklets will have the rules but not example puzzles.

Notation

Each section of this instruction booklet has six puzzle types. Each puzzle type comes with the rules, an example puzzle, and the solution to the example.

We'll use standard notation for example solutions, but **you can use whatever notation you want**, as long as you are consistent throughout a solution, and it is clear to us what you mean.

If multiple marks are in the same cell, we'll consider the largest such mark. This is to let you make small notes on the corners or edges of the cells without having to erase them.

If we can't understand what a mark means, or we're not sure what the intended final mark is, we'll consider that cell blank.

Divisions and Prizes

We have two divisions: Advanced and Beginner. Use your judgment as to which one you belong to. Feel free to switch mid-competition; we'll use your last submission.

We have prizes for the top 5 solvers in each division, plus the next 5 MIT students. We might also have *special* awards, at our discretion.

Credits

Most instructions are copied from **Eric Fox**'s puzzle rules document.

Puzzles were constructed by **djmathman**, **jkittykitkat**, and **ft029**.

Testsolvers were **TostCronch**, **cjquines**, **CJK**, **not_coal**, **Idontknow**, and **Wei-Hwa Huang**.

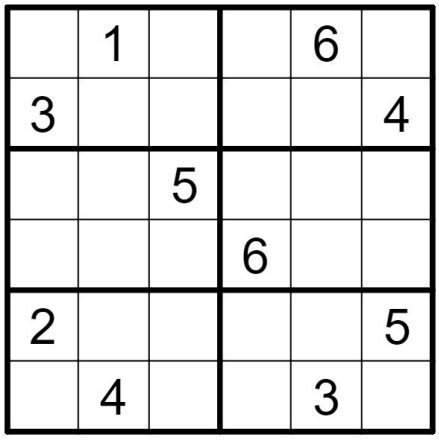
Tools used included **Penpa+**, **puzz.link,** and **Inkscape**.

Round 1: “Pop Culture”

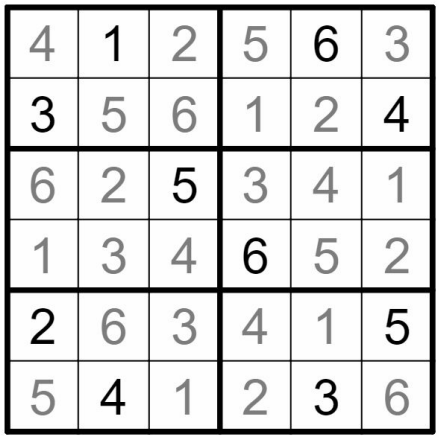
These puzzle types have all broken into the mainstream in some way.

1.1–1.3 Sudoku

Place a number from 1 to N into each empty cell so that each row, column, and bold region contains every number from that range with no repeats, where N is the side length of the grid.



	1			6	
3					4
		5			
			6		
2					5
	4			3	

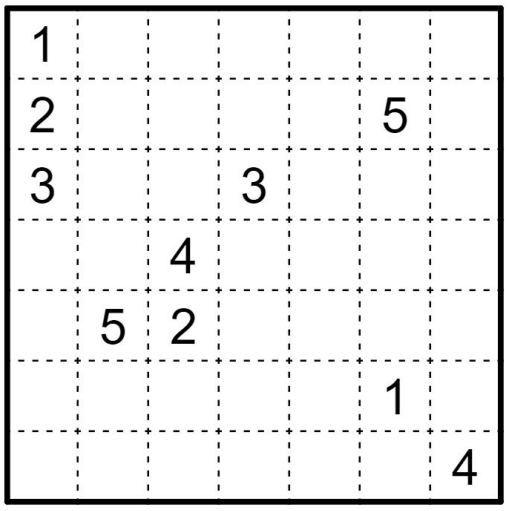


4	1	2	5	6	3
3	5	6	1	2	4
6	2	5	3	4	1
1	3	4	6	5	2
2	6	3	4	1	5
5	4	1	2	3	6

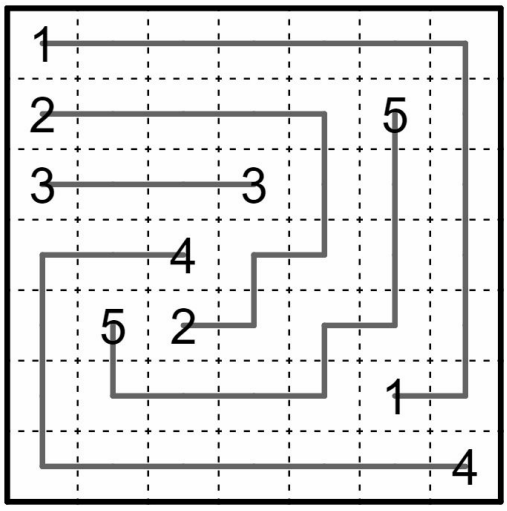
1.4–1.6 Numberlink (*a.k.a. Flow Free®*)

Draw non-intersecting paths through the centers of some cells, each connecting one clue to its equal counterpart.

Note: In these puzzles, every cell will be used by some path. Feel free to use this to your advantage.



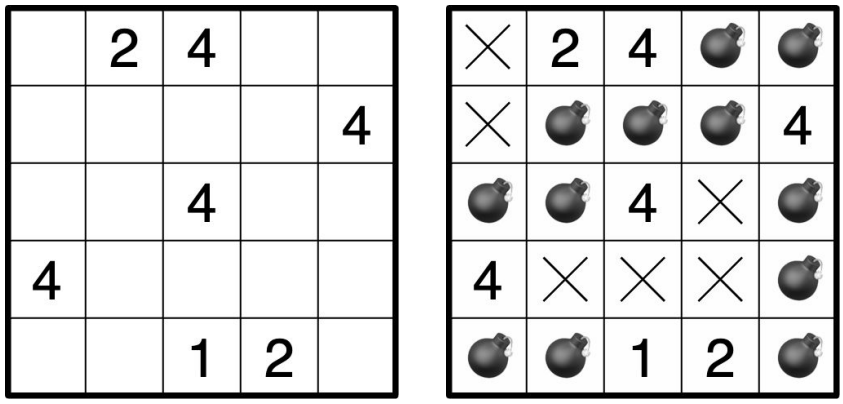
1						
2					5	
3			3			
		4				
	5	2				
					1	
						4



1						
2					5	
3			3			
		4				
	5	2				
					1	
						4

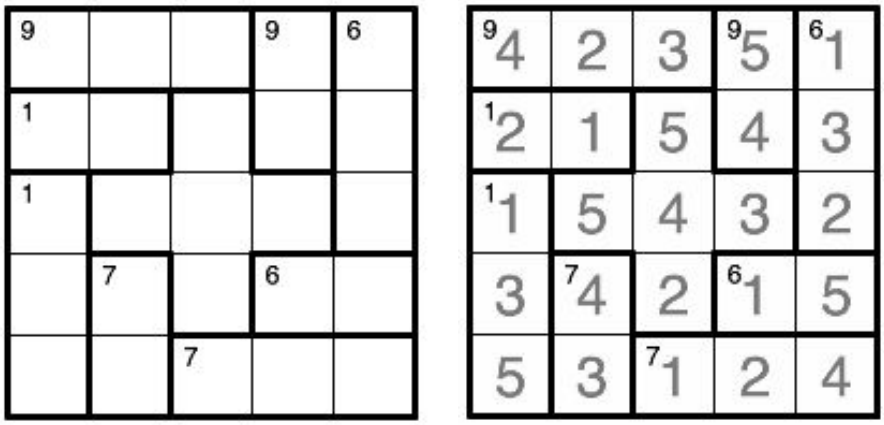
1.7–1.9 Minesweeper

Place mines into some empty cells so that each clue has the indicated number of mines in the (up to) eight surrounding cells.



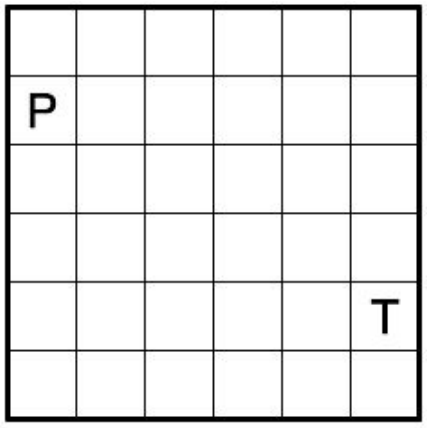
1.10–1.12 TomTom (*a.k.a. KenKen, kind of*)

Place a number from 1 to N into each cell so that each row and column contains every number from that range with no repeats, where N is the side length of the grid. A clue represents the value obtained by applying an operation iteratively on the numbers in the region the clue is in. If no operation is given, it may be any of +, –, ×, or ÷. Subtraction and division in regions with more than two numbers are handled by taking the largest number and subtracting/dividing all the others. For example, a region clued with 1– can have 3, 6, and 2, as 6–3–2 = 1, but it can't have 4, 5, and 2.



1.13–1.15 Scrabble

Place a letter into some cells of the grid so that all letters form one orthogonally connected area. Every run of two or more letters in consecutive cells in a row or column forms a word read from left to right or from the top down. All words are given outside the grid and must each appear exactly once.

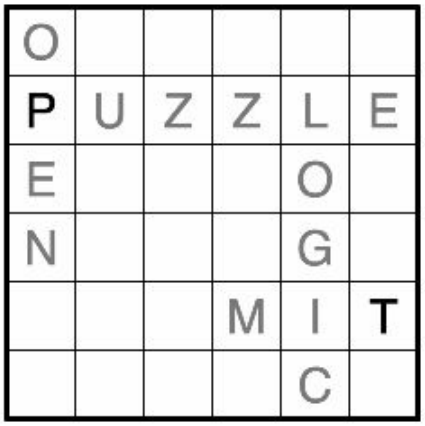


MIT

LOGIC

PUZZLE

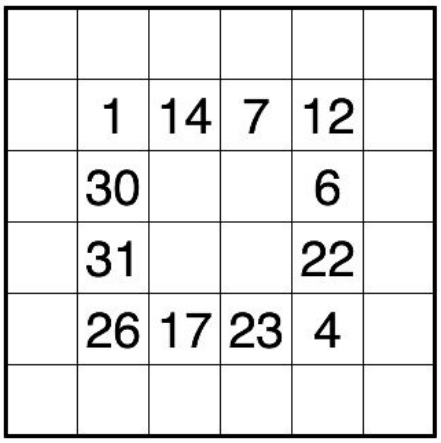
OPEN

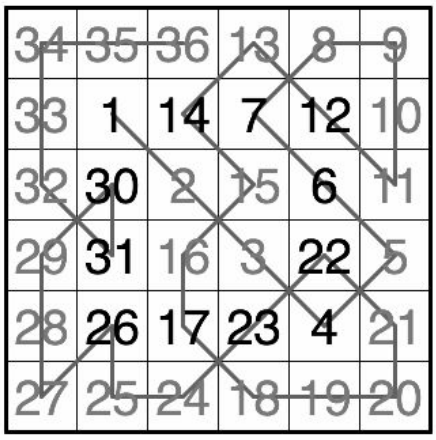


1.16–1.18 Hidato

Place a number from 1 to N into each cell so that every number appears once, where N is the total number of cells in the grid. Every number must be adjacent (orthogonally or diagonally) to all numbers in the grid that are consecutive with it.

Note: You can either place all numbers or draw a complete path.



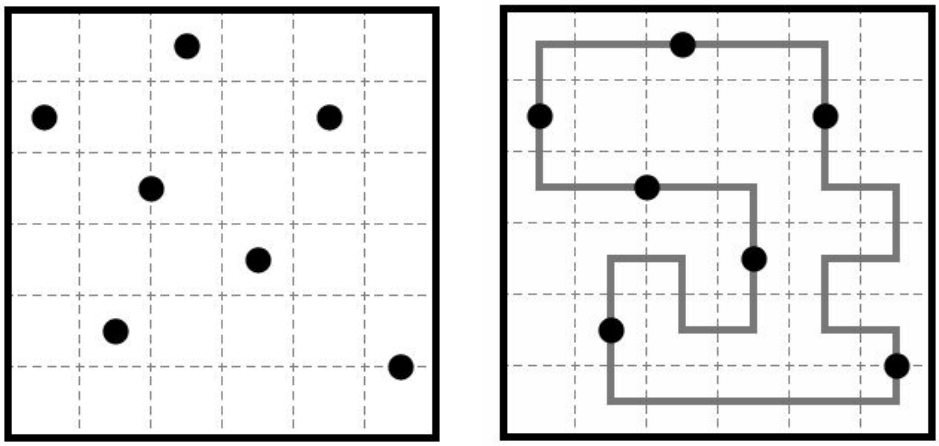


Round 2: Numberless

These are all puzzle types that do not use number clues.

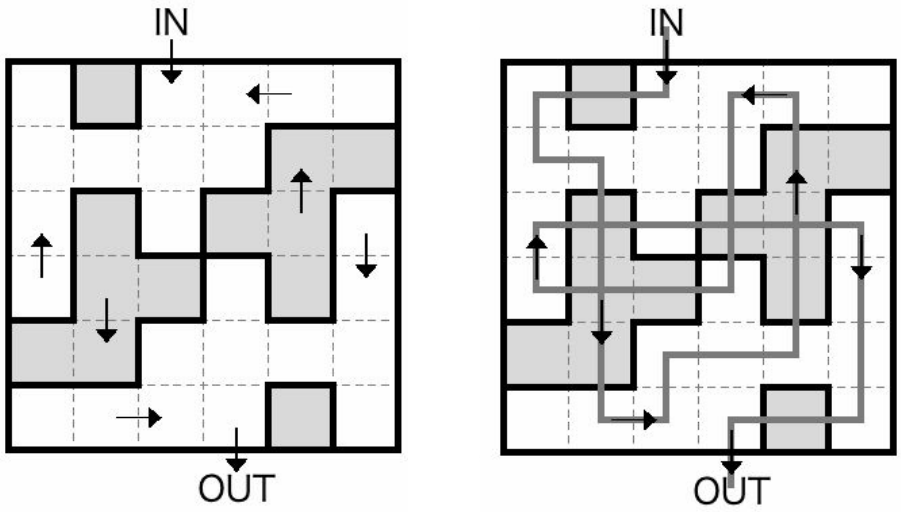
2.1–2.3 Midloop

Draw a non-intersecting loop through the centers of some cells that passes through every circle. Each circle marks the center of the straight line segment it lies on. Not all centers are given.



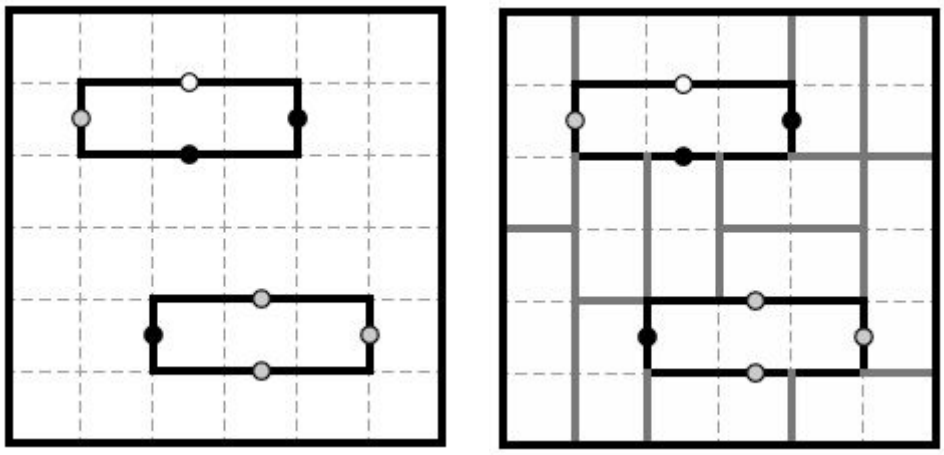
2.4–2.6 Icebarn

Draw a path through the centers of some cells, entering the grid at the “IN” marking and exiting at the “OUT” marking. The path must travel through all of the arrows in the indicated direction. Two perpendicular line segments may intersect each other only on icy cells, but they may not turn at their intersection or otherwise overlap. The path may not turn on icy cells, and each orthogonally connected group of icy cells must be passed through at least once.



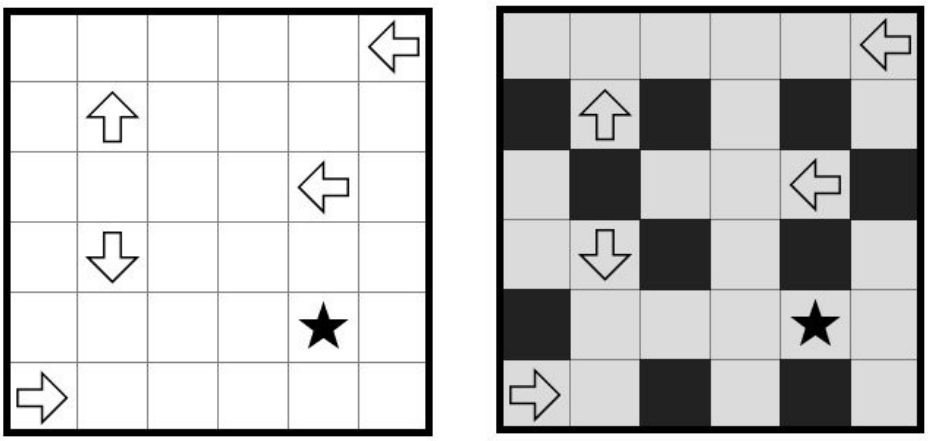
2.7–2.9 Voxas

Divide the grid into 1x2 and 1x3 regions. Borders must separate two different regions. Borders with white dots separate regions with the same size and orientation. Borders with black dots separate regions with neither the same size nor the same orientation. Borders with grey dots separate regions with either the same size or the same orientation, but not both.



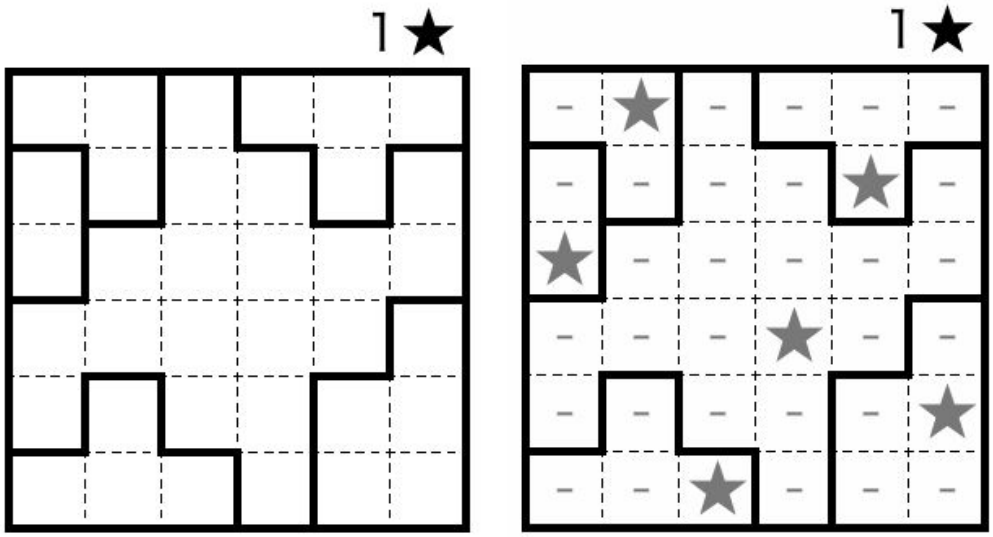
2.10–2.12 Guide Arrow

Shade some empty cells so that no two shaded cells are orthogonally adjacent and the remaining unshaded cells form one orthogonally connected area. No complete loop of cells may be unshaded (including 2x2s). An arrow indicates the only direction in which one could begin a path to the star without going through a shaded cell or backtracking.



2.13–2.15 Star Battle

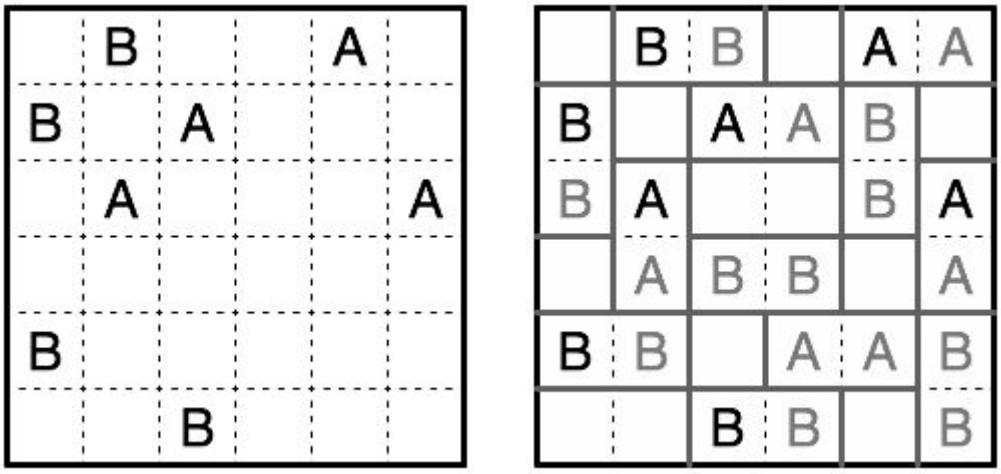
Place stars into some cells such that each row, column, and outlined region contains exactly N stars. The value of N is given outside the grid. Stars may not touch one another, not even diagonally.



2.16–2.18 Double Domino

Place A and B dominoes on the board using the squares containing letters as hints. The dominoes should all be connected orthogonally, but dominoes of the same letter must not touch at the edges. The squares contained in dominoes must not form 2×2 clumps.

Note: It's enough to place the letters; you don't need to shade or outline the dominoes.



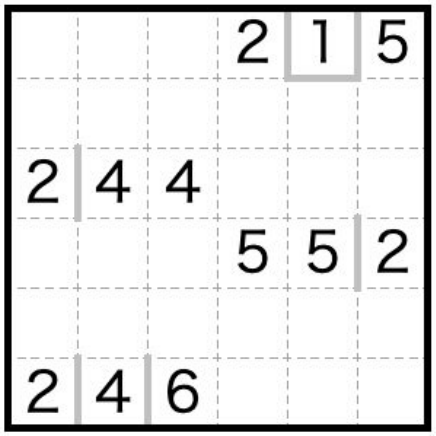
Round 3: Powerhouses

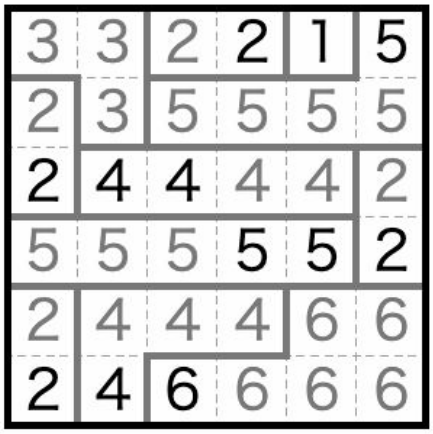
These puzzle types are ubiquitous within logic puzzle circles.

3.1–3.3 Fillomino

Divide the grid into regions of orthogonally connected cells. Two regions of the same size may not share an edge. Clued cells must belong to a region containing the indicated number of cells.

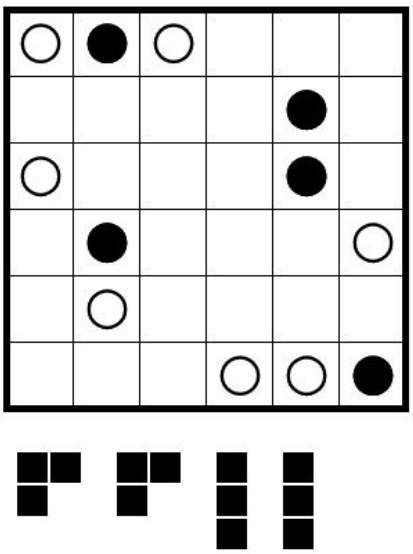
Note: It's enough to divide into regions; you don't need to place numbers in all the cells.

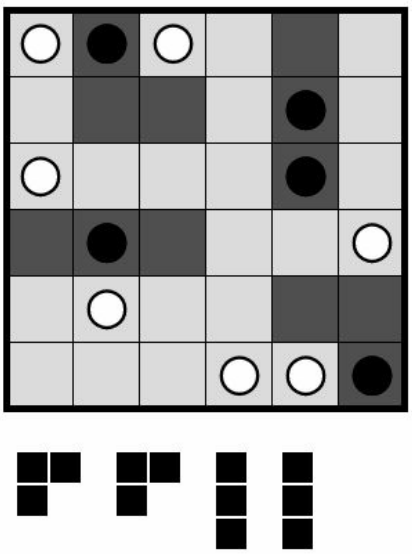




3.4–3.6 Statue Park

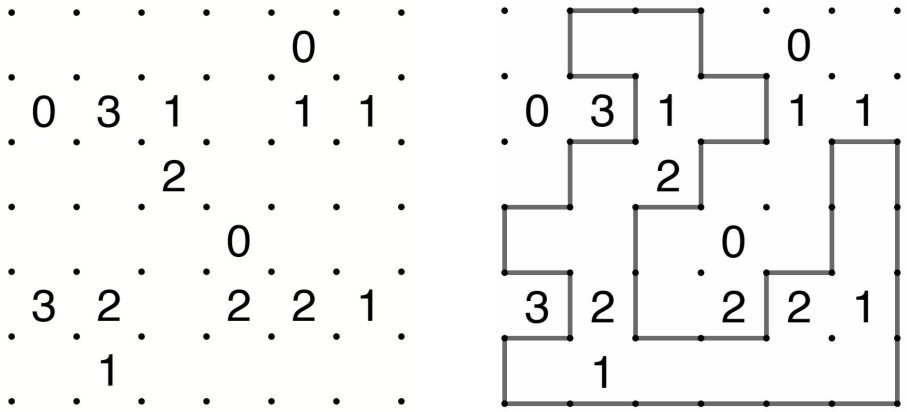
Place each shape from the bank given outside the grid into the grid so that no two shapes share an edge and all unused cells form one orthogonally connected area. Rotating and reflecting shapes is allowed. Cells with black circles must be used by a shape, and cells with white circles must not be used by a shape.





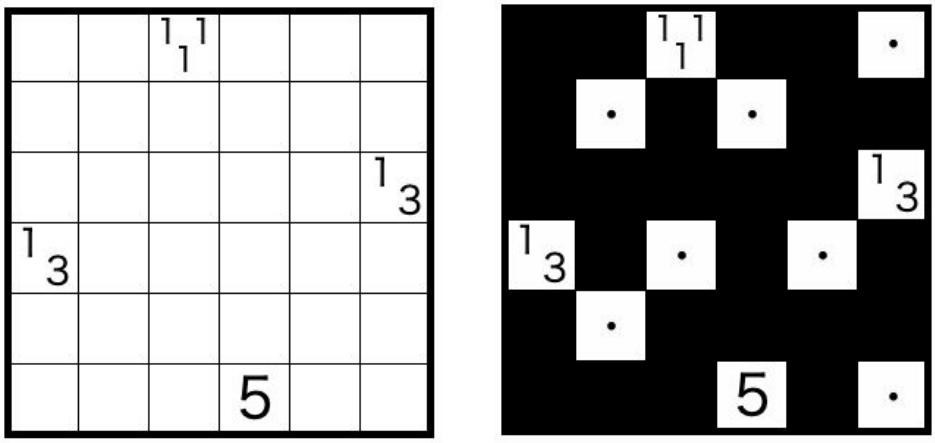
3.7–3.9 Slitherlink

Connect some pairs of orthogonally adjacent dots to form a single non-intersecting loop. Clues represent the number of edges drawn surrounding the clue (up to four).



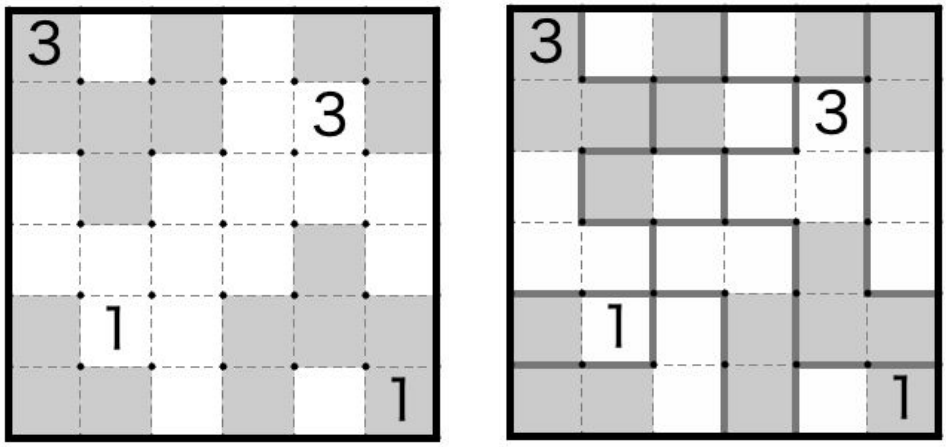
3.10–3.12 Tapa

Shade some cells so that all shaded cells form one orthogonally connected area and no 2x2 region is entirely shaded. Clues cannot be shaded, and represent the lengths of the blocks of consecutive shaded cells in the (up to) eight cells surrounding the clue.



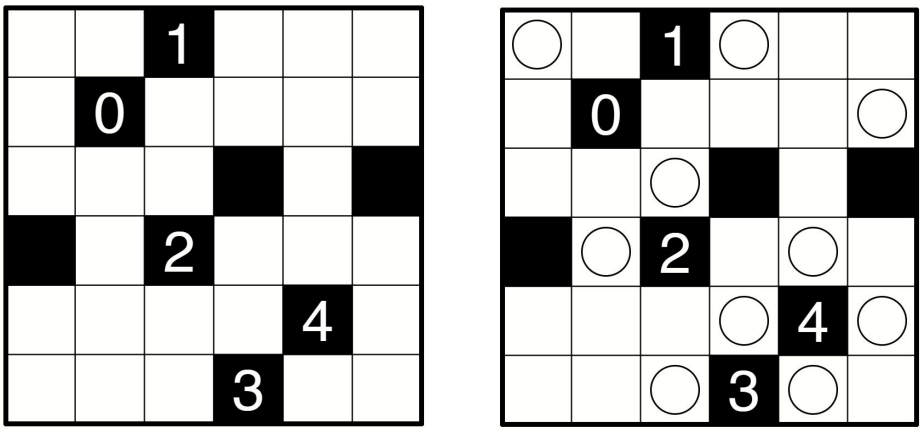
3.13–3.15 Double Choco

Divide the grid into regions of orthogonally connected cells, each containing a connected group of white cells and a connected group of grey cells, with the property that the shape of the white cells is identical to the shape of the grey cells, allowing rotations and reflections. Clued cells must belong to a region containing the indicated number of white cells and the indicated number of grey cells.



3.16–3.18 Akari

Place lights in some cells so that every cell is illuminated. Lights illuminate the cell they're in as well as all cells seen in a straight line horizontally or vertically, not obstructed by a black cell. Lights may not illuminate each other. Clues represent the number of lights in the (up to) four cells surrounding the clue.

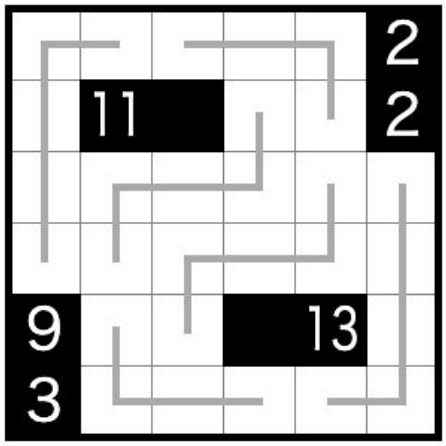


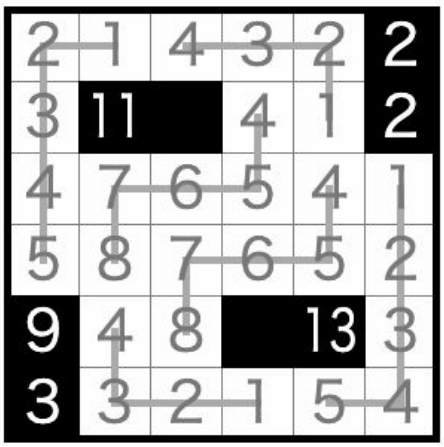
Round 4: Underrated Genres

This final round is a mixture of genres that are either quite new (and show a lot of promise!) or otherwise don't get the love we think they should.

4.1–4.3 Number Rope

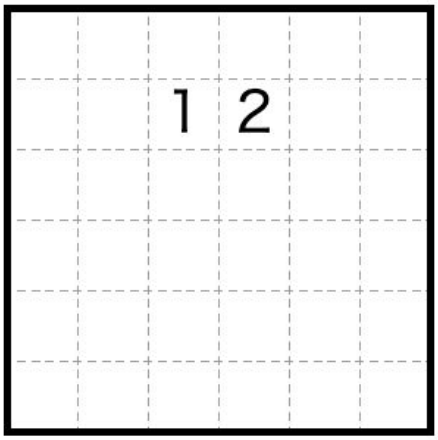
Place a number from 1 to 9 into each white cell. No two orthogonally adjacent cells may contain the same number. Numbers along a rope must form a sequence of consecutive numbers, in order. A clue in a black cell indicates the sum of the numbers in the orthogonally adjacent white cells.

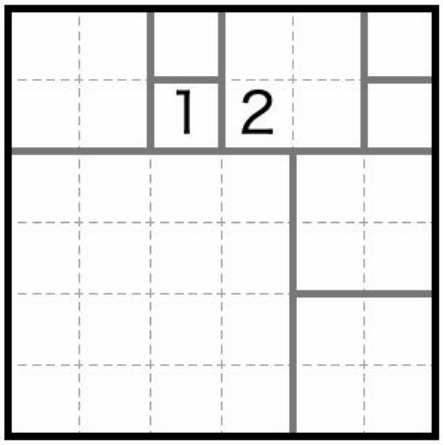




4.4–4.6 Square Jam

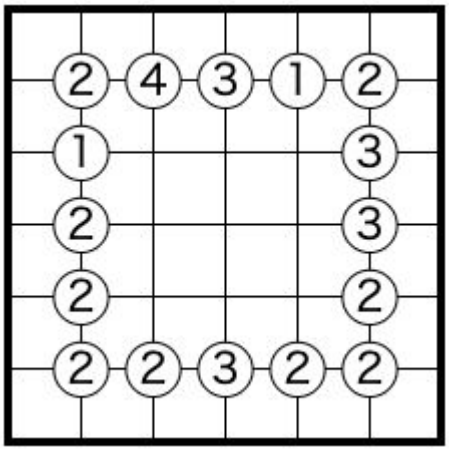
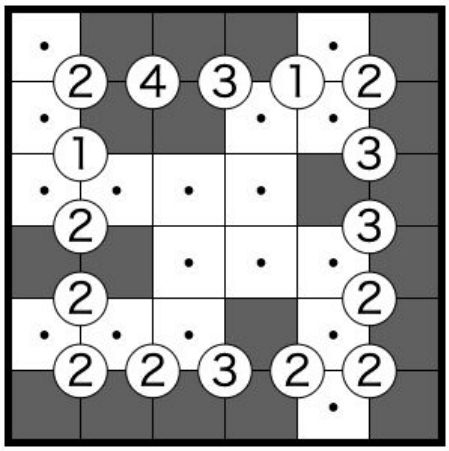
Divide the grid into square regions of orthogonally connected cells. A number indicates the side length of the square it's in. Region borders may not form any four-way intersections.





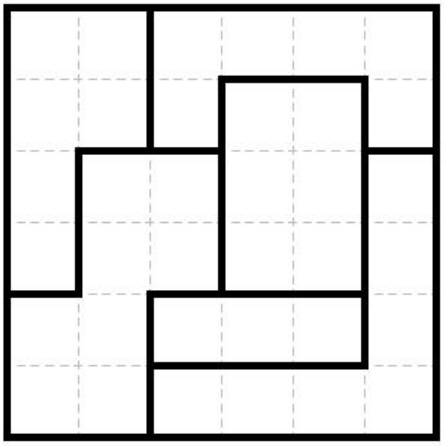
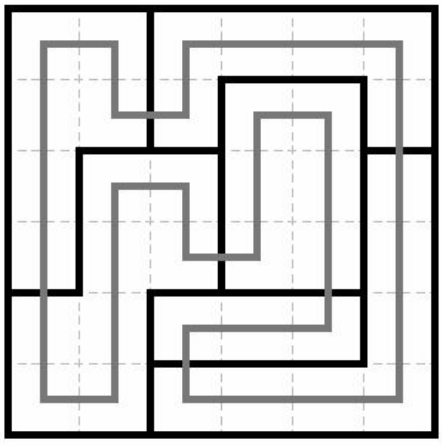
4.7–4.9 Creek

Shade some cells so that the remaining unshaded cells form one orthogonally connected area. A clue represents how many of the (up to) four cells it touches are shaded.

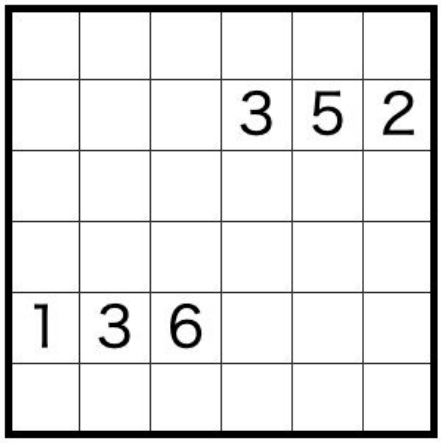
4.10–4.12 Entry Exit

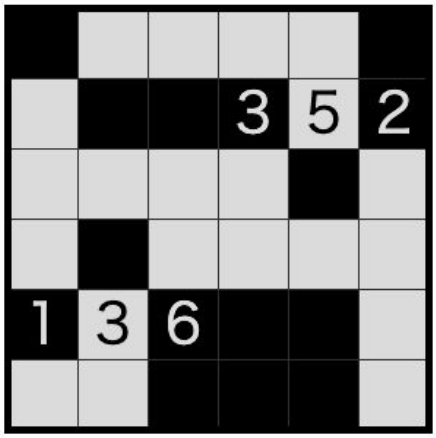
Draw a non-intersecting loop through the centers of all empty cells which passes through each region exactly once.

4.13–4.15 Choco Banana

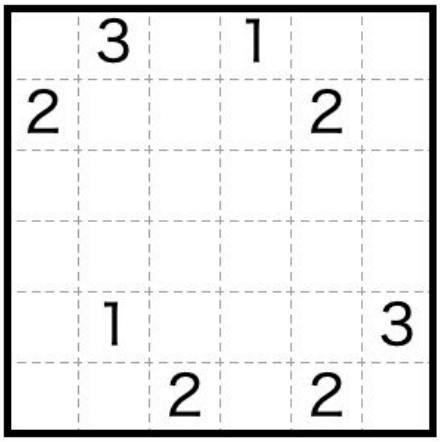
Shade some cells so that all areas of orthogonally connected shaded cells are rectangular and all areas of orthogonally connected unshaded cells are not rectangular. A clue represents the size of its group of shaded/unshaded cells.

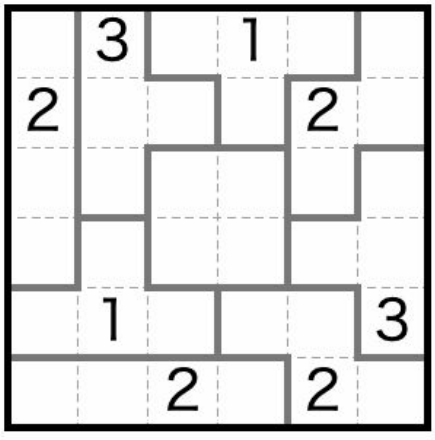




4.16–4.18 FourCells

Divide the grid into regions of four orthogonally connected cells. Clued cells must have the indicated number of region borders or grid borders surrounding them.



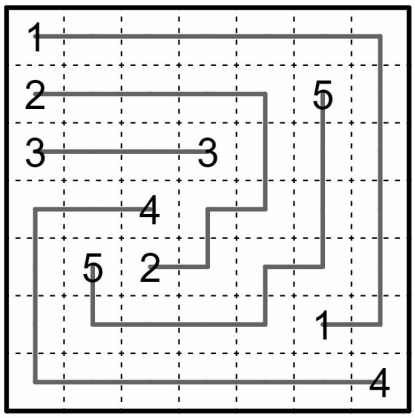


Round 1: "Pop Culture"

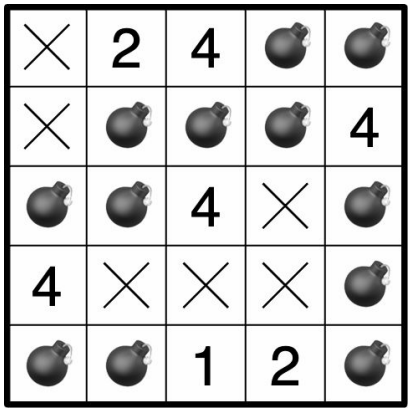
Sudoku

4	1	2	5	6	3
3	5	6	1	2	4
6	2	5	3	4	1
1	3	4	6	5	2
2	6	3	4	1	5
5	4	1	2	3	6

Numberlink



Minesweeper



TomTom

9 4	2	3	9 5	6 1
1 2	1	5	4	3
1 1	5	4	3	2
3	7 4	2	6 1	5
5	3	7 1	2	4

Scrabble

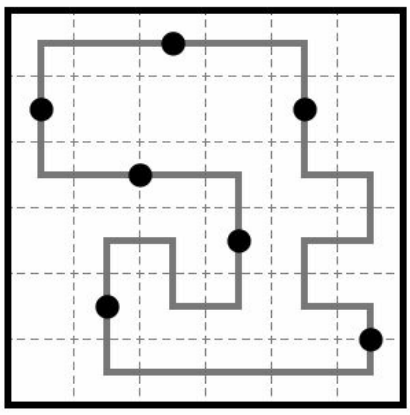
O					
P	U	Z	Z	L	E
E				O	
N				G	
			M	I	T
				C	

Hidato

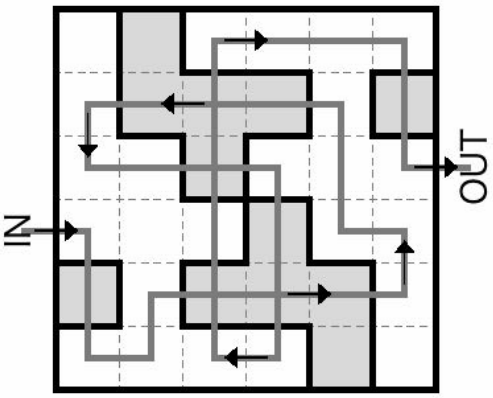
34	35	36	13	8	9
33	1	14	7	12	10
32	30	2	15	6	11
29	31	16	3	22	5
28	26	17	23	4	21
27	25	24	18	19	20

Round 2: Numberless

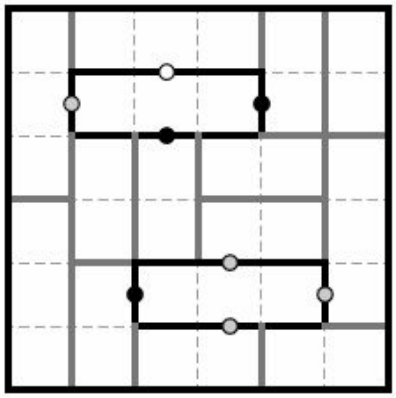
Midloop



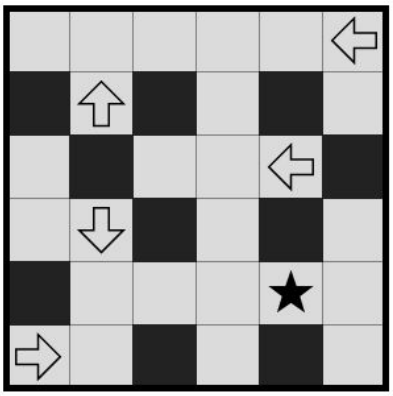
Icebarn



Voxas

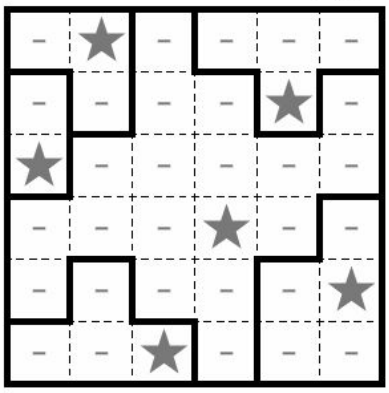


Guide Arrow



Star Battle

1 ★

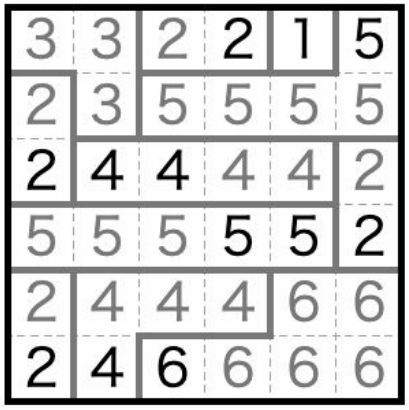


Double Domino

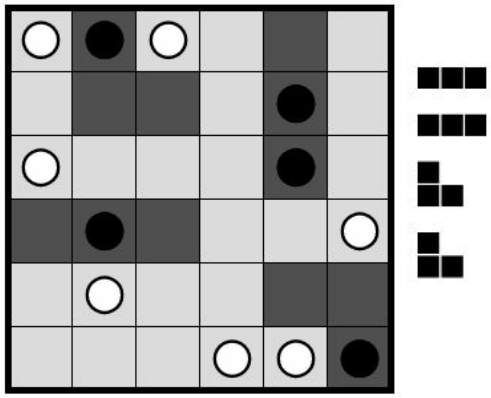
	B	B		A	A
B		A	A	B	
B	A			B	A
	A	B	B		A
B	B		A	A	B
		B	B		B

Round 3: Powerhouses

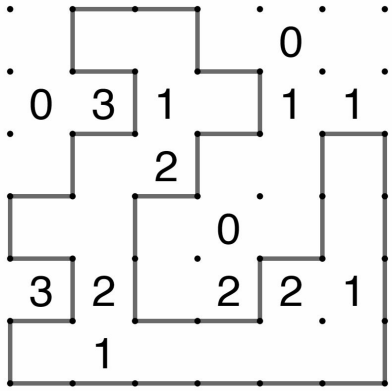
Fillomino



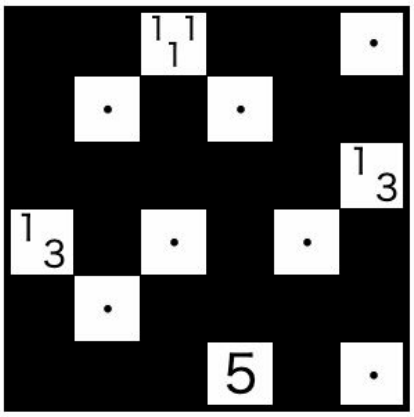
Statue Park



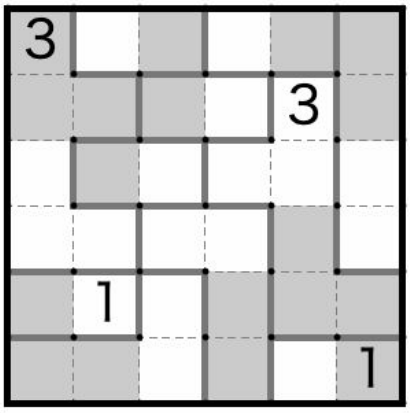
Slitherlink



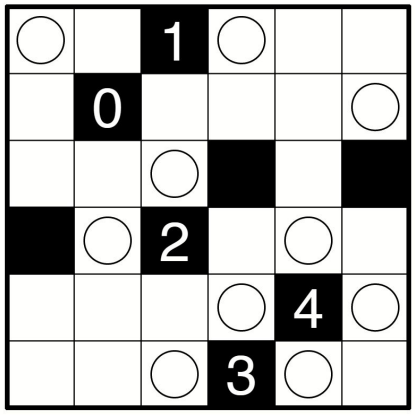
Tapa



Double Choco

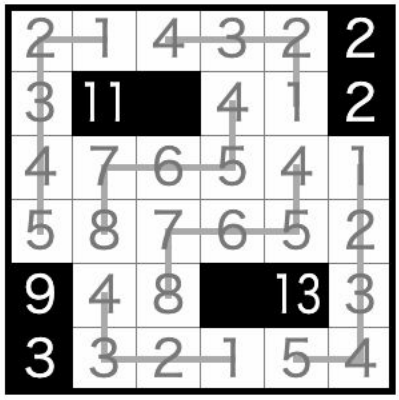


Akari

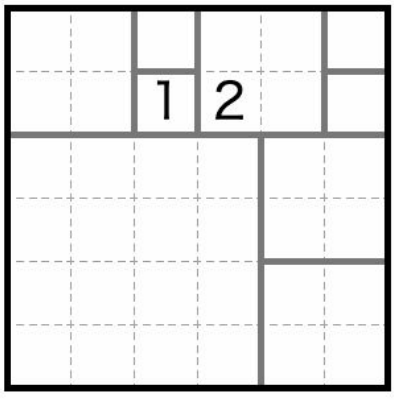


Round 4: Underrated Genres

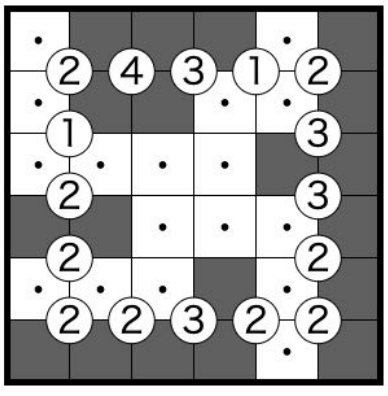
Number Rope



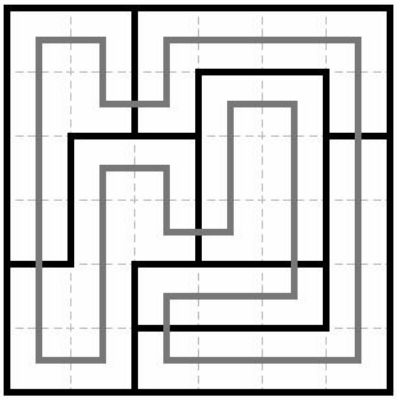
Square Jam



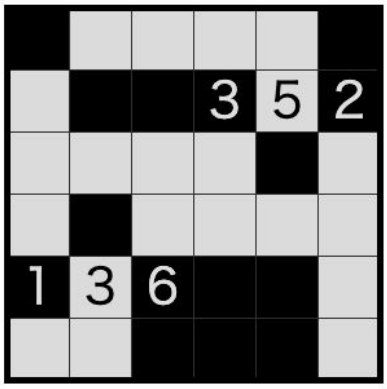
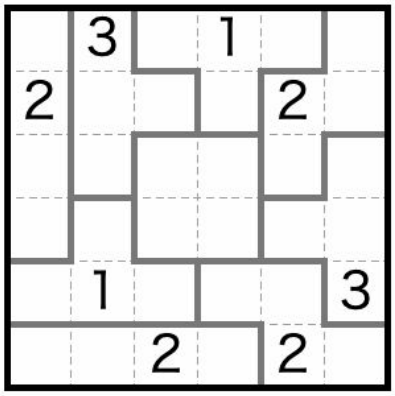
Creek



Entry Exit



Choco Banana



FourCells