

# 25 Years – Instruction Booklet

## LMI Puzzle Test November 2020 by Ivan Koswara

On November 9, I will turn 25. Puzzles have been a significant part of my life; I took part in the first LMI contest in February 2011 (Melon's Puzzle Zoo, which I definitely didn't do very well in); I constructed and published my first puzzle online in March 2011 (an 8x8 Slitherlink), and wrote my first LMI test in May 2013 (Deception). Since then, I have been getting more familiar with various puzzles, not only logic puzzles but also other forms like puzzlehunt-style puzzles. I have contributed many puzzles and invented several genres. What's a better way to celebrate my birthday than giving you an LMI test that looks back at my creations?

This Instruction Booklet is structured slightly differently from usual. After the test information and points table, the genres follow; however, besides having the rules and an example puzzle, each genre also has some history and background information attached to it, on how it relates to me. It also has a practice puzzle, usually taken from a past puzzle. Therefore, the information for each genre takes up a whole page. If you are not interested in the bits of trivia, you can skip all parts below the horizontal line. But if you want to read and know more about me, feel free to read them. There is no solution given for the practice puzzles, but feel free to discuss them on the LMI thread. The last page contains a summary of rules, in case you are a veteran solver and are familiar with many logic puzzle genres in various competitions.

Thanks to Jamie Hargrove, lovemathboy, and ManyPinkHats for testsolving the puzzles. Thanks to opt-pan, rjrudman, and Swaroop Guggilam for creating and translating penpa-edit, which generated all the images in this test.

## Test information

The test lasts for 125 minutes. You can start the test at any time during the test period (November 6-11); check the webpage for more information. Once you start the test, you will receive a password for the Puzzle Booklet.

The Puzzle Booklet contains 25 puzzles spread across 13 genres. The first 12 genres have 2 puzzles each, one smaller and one larger. The last genre has only 1 puzzle. There is no online interface to solve the puzzles. It's recommended to print the booklet and solve the puzzles on paper, but solving with an image editor on your computer should be possible.

With each puzzle, there is an answer key that you need to derive from your solution. Each puzzle uses a specific answer key format, detailed in the "Answer key formats" section below. Once you have solved a puzzle, take the answer key and submit it to the form.

Instant Grading is enabled. Once you submit the answer to a puzzle, you will immediately know if it's correct or not, and you may correct it if it's wrong. Each incorrect answer to a puzzle reduces its potential value: the first, second, third, and fourth mistakes reduce the value to 90%, 70%, 40%, and 0% of the original value, respectively. (After that, the puzzle will not award any points upon a correct answer.)

The puzzles altogether are worth a total of 2525 points. If you finish all puzzles before the time is up, you will be awarded 25 points per minute remaining. (Note that you must finish all puzzles to claim the time bonus, even if some of them have reduced down to 0%.)

## Points table

Points typically indicate the difficulty of each puzzle and the time taken to solve it, but your personal experience may differ. The left column is for the smaller puzzle and the right column is for the larger puzzle.

“Month” refers to the first appearance of the genre, or in some cases, the inspiration for the genre that ends up in the test. It otherwise has no relevance for the test.

Puzzle	Month	Points	
Surveyors Heyawake	April 2012	70	180
Tetromino Slitherlink	September 2012	60	200
Short Yajilin	November 2013	30	100
Linked Signals	January 2015	70	160
Poset Futoshiki	March 2016	30	140
Maximal Archipelago	October 2017	90	160
Abacus Kurotto	December 2017	60	200
All-3 Skyscrapers	May 2018	50	200
Mysterious Fillomino	December 2018	80	200
Almost-Unique Heteromino	March 2019	40	60
Greener Grasses	April 2019	50	100
No-Touch Nurikabe	May 2019	30	140
Short Answer	November 2020	25	
TOTAL		2525	

## Answer key formats

There are several kinds of answer keys used for the genres, detailed here. The instructions for the genre, both later in this Instruction Booklet and in the Puzzle Booklet, will only contain a short form of the answer key format. Look at the genres for answer key examples.

### Number filling genres (Poset Futoshiki, All-3 Skyscrapers)

For each marked row/column, enter the contents of the cells. If a cell contains a multiple-digit number, only enter the last digit, e.g. 0 for a cell containing 10.

### Dynasty genres (Surveyors Heyawake, Maximal Archipelago)

Enter the column number of the leftmost black cell of each row, from top to bottom. If there is no black cell in the row, enter 0 for the row. If the column number is a multiple-digit number, only enter the last digit, e.g. 0 for column number 10. (The top of the grid contains the column numbers.)

### Shading genres (Abacus Kurotto, No-Touch Nurikabe)

For each marked row/column, enter the lengths of contiguous cell segments of the same color (black/white). If the length is a multiple-digit number, only enter the last digit, e.g. 0 for a segment of length 10.

### Loop genres (Tetromino Slitherlink, Short Yajilin, Linked Signals)

For each marked row, enter the lengths of horizontal loop segments of the loop. For each marked column, enter the lengths of vertical loop segments of the loop. If the length is a multiple-digit number, only enter the last digit, e.g. 0 for a segment of length 10.

### Region division (Mysterious Fillomino, Almost-Unique Heteromino, Greener Grasses)

For each marked row/column, enter the lengths of contiguous white cells separated by the region borders. Skip black cells. If the length is a multiple-digit number, only enter the last digit, e.g. 0 for a segment of length 10.

### Short Answer

Enter the answer to the question.

## Surveyors Heyawake (70 + 180 points)

Shade some cells black. No two black cells share a side. All white cells form a single contiguous area. No horizontal/ vertical line of white cells spans across more than two rooms. (All rooms will be rectangular.)

Within each room containing numbers, one number behaves as a Heyawake clue: it counts the number of black cells in the room. All other numbers behave as Minesweeper clues: each counts the number of black cells among the cell itself and (up to eight) surrounding cells. (In a room, there may be several numbers that end up all equal to the number of black cells in the room. Only one can be counted as a Heyawake clue; all others must also be Minesweeper clues. It is not necessary to mark which clues are the Heyawake ones; sometimes this might even be ambiguous, as in the right-most room of the example.)

» Answer key: Leftmost black cell in each row. (Example: 134521)

2					2
	1		3		
		2		4	
2					2

2					2
	1		3		
		2		4	
2					2

Surveyors Heyawake was the second genre I could call mine. (The first was [Number In Order](#), which was close enough to Str8ts that I remember getting into arguments with Str8ts' creator.) The "exactly one clue in a group of clues behaves differently" condition would later appear in [Usonian](#) (Nikoli) and [Turf](#) (John Bulten).

You might recall that this genre also appeared in [Deception](#). However, now I dislike how the genre evolved there. The rules became inelegant, with two kinds of clues of two meanings each, and no restriction of "exactly one clue behaves differently". So I'm going back to the old version.

The practice puzzle is taken from [my blog](#) in April 2012. There would be two more puzzles to follow, including [one with non-rectangular regions](#).

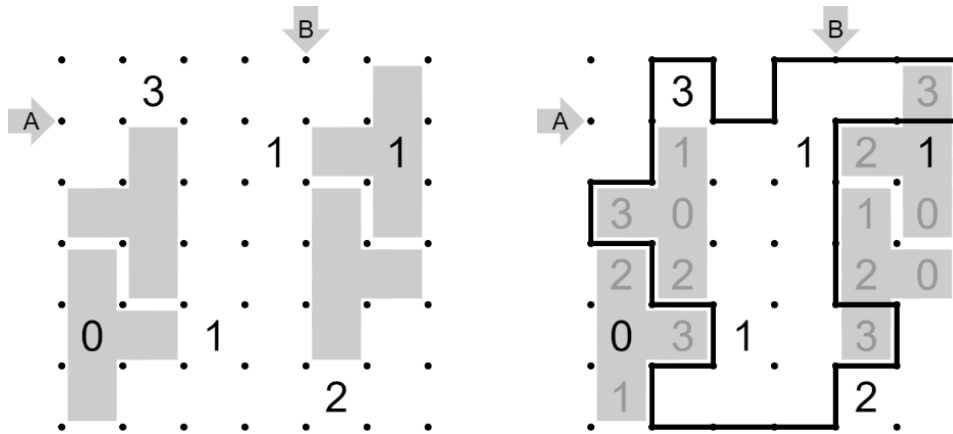
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## Tetromino Slitherlink (60 + 200 points)

Draw a loop connecting orthogonally adjacent dots. The loop does not touch or cross itself. Each number counts the number of sides that belong to the loop.

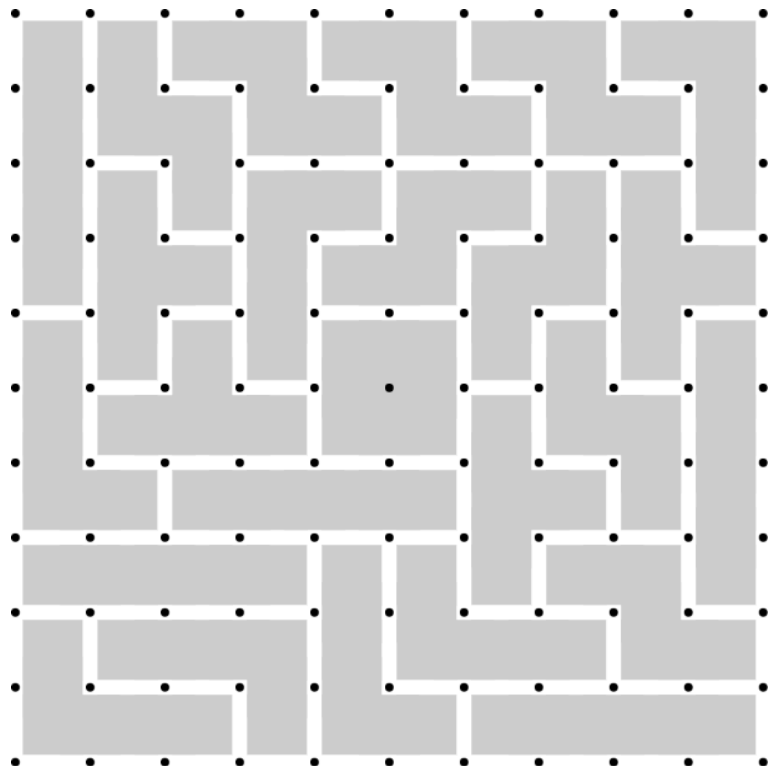
For each marked tetromino, it must be possible to fill the cells with 0, 1, 2, 3 in some order so they become valid clues.

» Answer key: Lengths of loop segments in marked lines. (Example: 12, 31)



Tetromino Slitherlink was an early variation on my blog, originally hiding the shapes. I'm not sure why I abandoned the variation, but it got picked up by Nikolai Beluhov in 2014, which changed the rules to reveal the shapes of the tetrominoes.

Later on, a similar genre got invented (I assume independently) by [Scott Handelman](#), where the unknowns satisfy a Latin square constraint but there is no region constraint. And then [Carl Worth](#) added the region constraint to make Sudoku Slitherlink. As of now, the only difference between Sudoku Slitherlink and Tetromino Slitherlink is that Tetromino Slitherlink lacks the Latin square constraint. Will Grandmaster Puzzles end up ditching the Latin square constraint too?



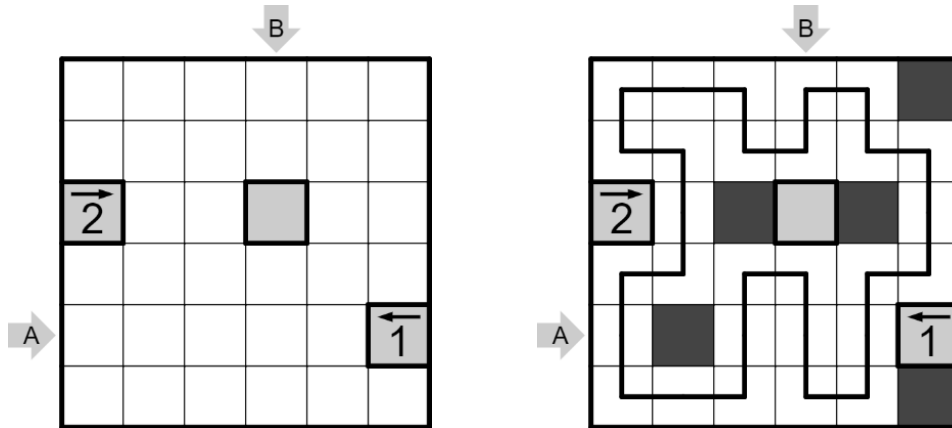
The practice puzzle comes from Nikolai Beluhov in [June 2014](#), currently the only Tetromino Slitherlink on his blog. I'm both glad and scared this type got picked up by him, given he is known to construct hellishly difficult puzzles; when I saw this puzzle posted I noped out hard.

## Short Yajilin (30 + 100 points)

Draw a loop going through orthogonally adjacent white cells. The loop does not touch or cross itself. Shade black all white cells not part of the loop. No two shaded cells are adjacent. Each clue counts the number of shaded cells in the indicated direction, up to the edge of the grid. (Grey cells are neither white nor shaded: the loop doesn't pass through them, they may be adjacent to shaded cells, and they are not counted by clues.)

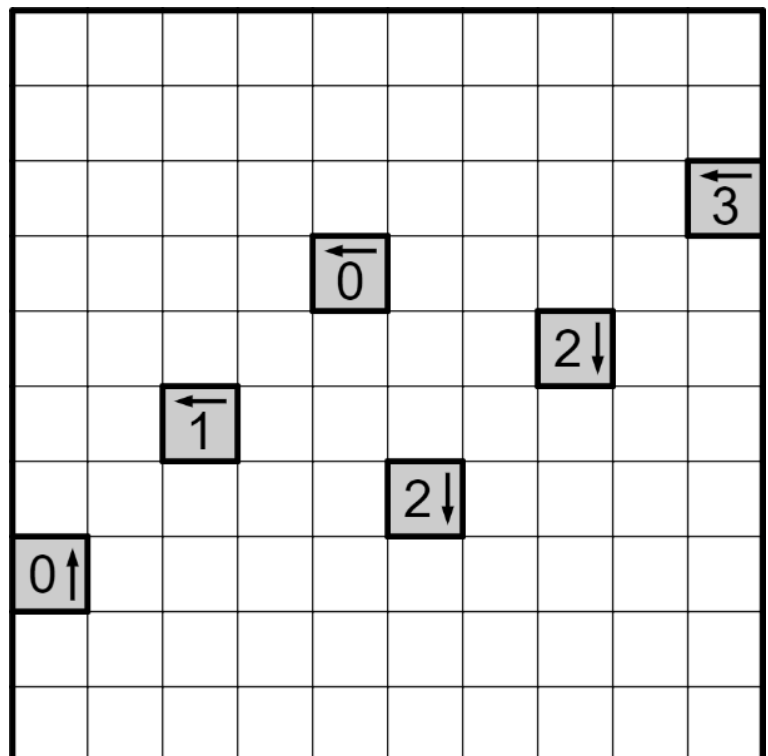
Whenever the loop goes straight through a cell, it must turn both before and after.

» Answer key: Lengths of loop segments in marked lines. (Example: 0, 12)



Back in 2014-2015, I wanted to write another puzzle test. I remember giving it the title "EVIL", consisting of entirely new variations. I ended up losing motivation (who knew inventing genres was hard?) and the project got shelved, probably not going to see the light of the day. However, there are at least two genres that came out from it. One was [Fillomino Operations](#), a Fillomino variant where region sizes are manipulated using arithmetic operations. The other was this Short Yajilin.

Short Yajilin must have been in the back of my mind for a long time, because when I was searching for genres to include for this test, I got reminded of this genre. I looked up if I've ever posted any Short Yajilin for my blog; the answer is yes, and when I tried solving it again, it was pleasant enough that I decided to give it another chance.



The practice puzzle, as you may guess, was taken from [my blog](#) in November 2013, the only Short Yajilin puzzle I've ever written before this. I don't remember if I even wrote anything for the shelved test! On the other hand, I remember having written at least two more Fillomino Operations. Which probably will also not see the light of the day.

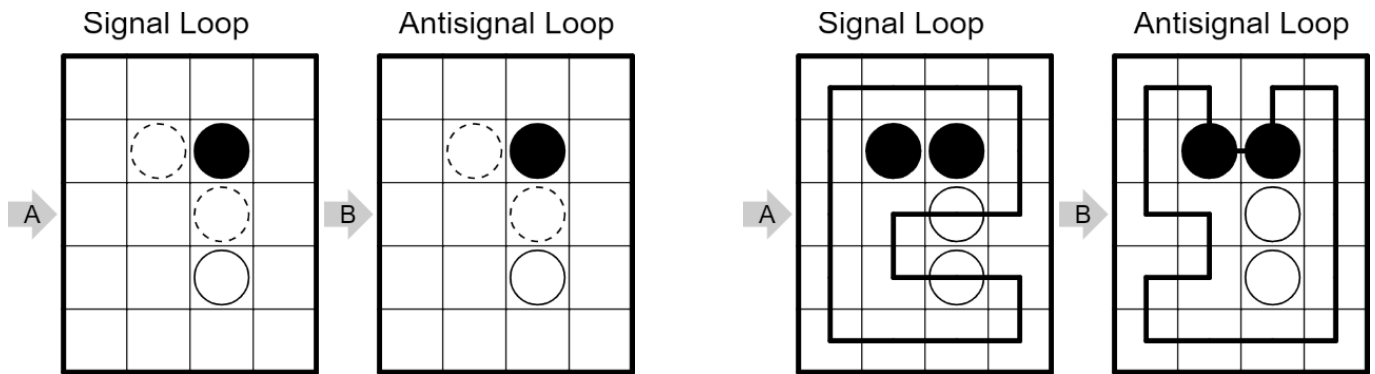
## Linked Signals (70 + 160 points)

Replace each dashed circle with either a white circle or a black circle, such that the same grid can be solved as Signal Loop and as Antisignal Loop. (The same grid is presented twice, one for Signal Loop and one for Antisignal Loop.)

**Signal Loop:** Draw a loop going through orthogonally adjacent cells. The loop does not touch or cross itself. The loop goes straight on white circles. The loop visits all cells except the black circles.

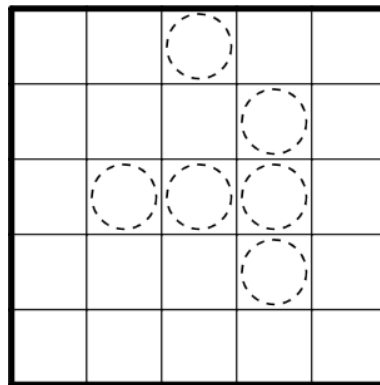
**Antisignal Loop:** Draw a loop going through orthogonally adjacent cells. The loop does not touch or cross itself. The loop turns on black circles. The loop visits all cells except the white circles.

» Answer key: Lengths of loop segments in marked lines. (Example: 2, 1)

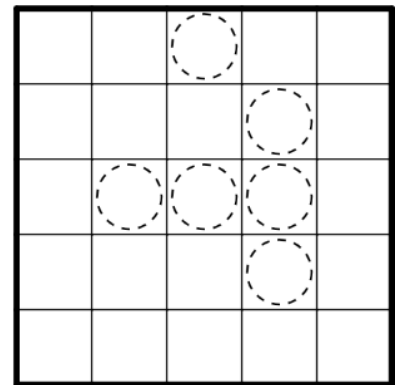


I was part of the winning team of MIT Mystery Hunt 2014, which meant I got to write for 2015. My sole contribution was [Polyglot](#), with the premise of 8 grids and 8 genres, and you had to figure out which combinations produced unique solutions. Yes, the other combinations might produce either no solution or multiple solutions. It was, uh, bad, by the standards of the current me. During the construction, I had to produce several grids that could be solved uniquely as multiple genres.

Signal Loop



Antisignal Loop



When choosing genres for this test, I decided it would be a good idea to revisit various puzzle events I've contributed to. Polyglot was one of them, so I wanted to figure out what I could do. Simply asking whether a puzzle can be solved uniquely sounds like a bad idea. Then I imagined giving you the opportunity of reliving my moments of constructing Polyglot. So, there you go. One of the grids in Polyglot was indeed a double-solve of Signal Loop and Antisignal Loop.

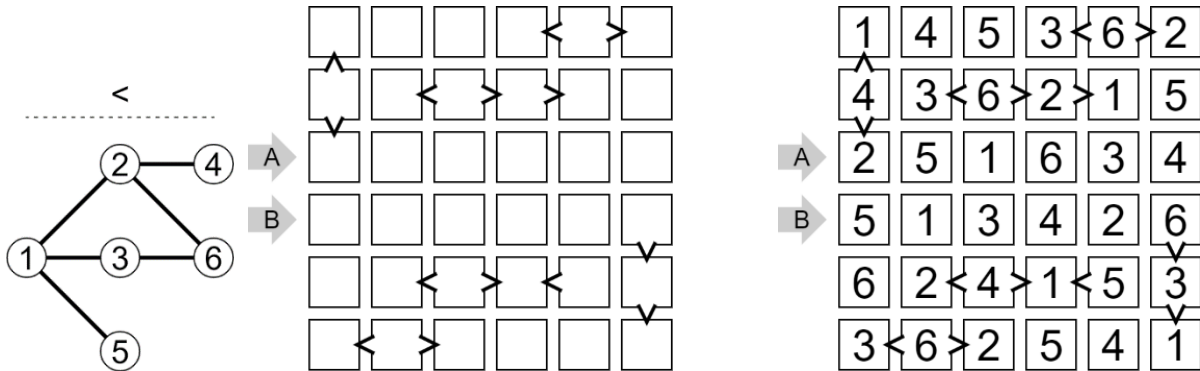
This practice puzzle is written specifically for this test. I mean, I can take the one grid from Polyglot that is a double-solve of both, but I don't think you'd appreciate a practice puzzle that lacks a major part of the rules (the dashed circles).

# Poset Futoshiki (30 + 140 points)

Put a number from the range 1-N into each cell, where N is the length of the grid. Each row/column contains each number exactly once.

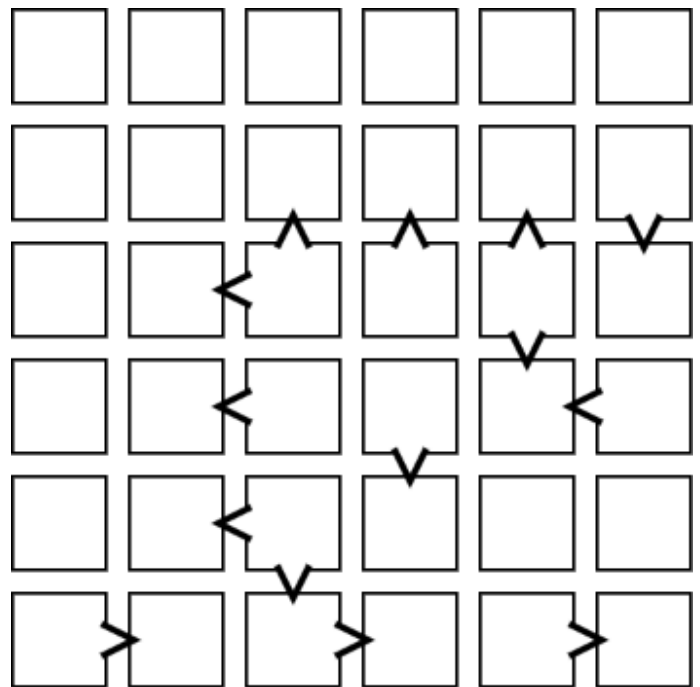
Whenever there's an inequality  $A < B$  in the grid, in the accompanying diagram there must be a path from A to B that goes strictly to the right, never taking a path that goes to the left.

» Answer key: Contents of marked lines. (Example: 251634, 513426)

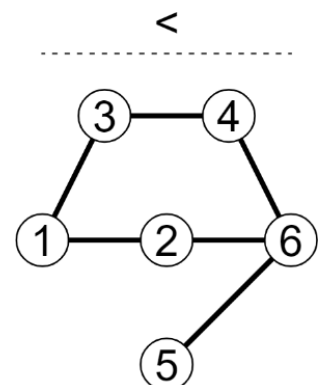


After a lull in writing for LMI, I was contacted to write for [Puzzle Marathon 2016](#), and I agreed with a type to be decided later. I forgot how the idea of Poset Futoshiki came into existence; it might have simply been me trying to generalize Futoshiki in a novel manner.

The first draft for Puzzle Marathon was a huge 16x16 monster with a break-in that's tough to spot. It was way too hard for the Marathon and I was asked to write another. But it became its own fun contest, [NEW, HUGE, AND CHALLENGING!](#) in March 2016. And Puzzle Marathon gets Linked Poset Futoshiki, a series of connected Poset Futoshiki puzzles with diagrams you have to match to the grids. Either way, after constructing such large projects, I have come to like this invention of mine, often toying with fun posets (diagrams) and discovering theorems about them.



The practice puzzle is taken from Ersatz U.S. Puzzle Championship, an event in early October 2020, organized by Joseph Howard mainly for Puzzlers Club members as a replacement for USPC 2020. The Instruction Booklet for EUSPC is [here](#). I will have to check with Joseph first about the Puzzle Booklet; I will likely drop the link in the LMI discussion thread.





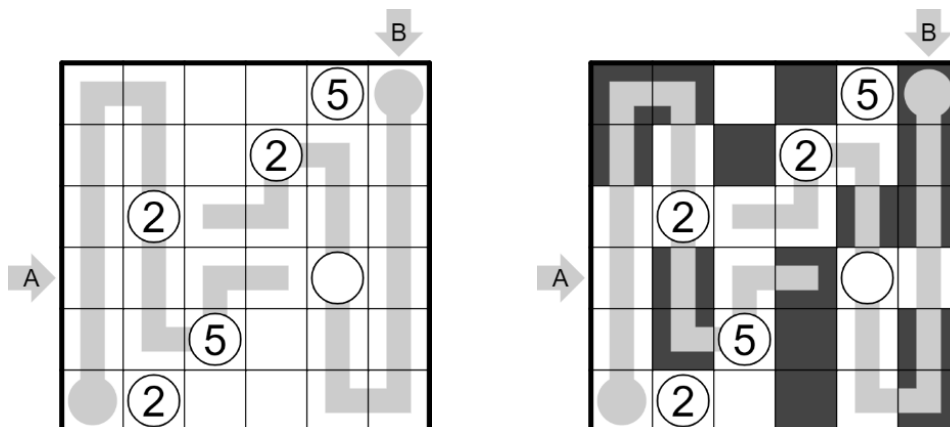


## Abacus Kurotto (60 + 200 points)

Shade some cells black. No circle is shaded. Each number counts the sum of sizes of black cell masses sharing a side with it.

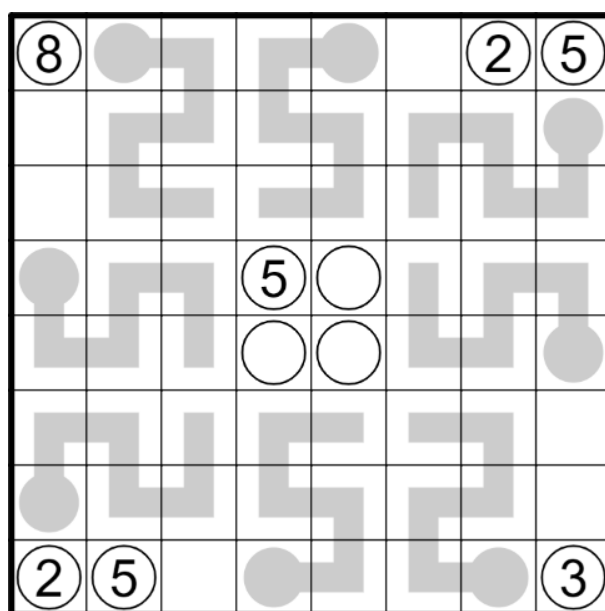
There are some abacus lines (a path with a bulb on an end) on the grid. Each abacus line is read by taking the lengths of black cell segments in order, starting from the bulb end; white cells separate the segments. All abacus lines must have the same reading, to be determined during solving. (For the example, the reading is 3, 2, 1.)

» Answer key: Lengths of contiguous black/white segments in marked lines. (Example: 11112, 312)



In Puzzlers Club, there is an annual event in December called Secret Solver. You might be familiar with an event called Secret Santa, where a group of people each buys a gift for another person in the group, but the recipient doesn't know who sent that gift. This is the same, except with people writing (personalized) puzzles. The first installment was in 2017, and since then the scale of the gifts has grown wild, with some people writing [a full-scale puzzlehunt of over 15 puzzles](#) or [a tightly connected logic puzzle on multiple grids and variations to match](#); mind you, these are written in just under 4 weeks. One thing for sure though, everyone was welcome to write whatever size was comfortable for them.

The first installment was in 2017, and I got assigned TheGreatEscaper (inventor of the genre Haisu, also appeared in [WAPC Part 1](#)). A few weeks before the event in December 2017, TheGreatEscaper mentioned the abacus mechanic, where there are several paths on the grid and each path needs to contain some particular sequence in order, skipping empty cells. So for the event, I went and focused this mechanic on shaded cells: each path had to have the same lengths of black segments in the same order. I wrote [6 puzzles](#), in 3 genres as vanilla and with an additional variant. However, none of those genres make their way here; Abacus Kurotto is brand new for this test.



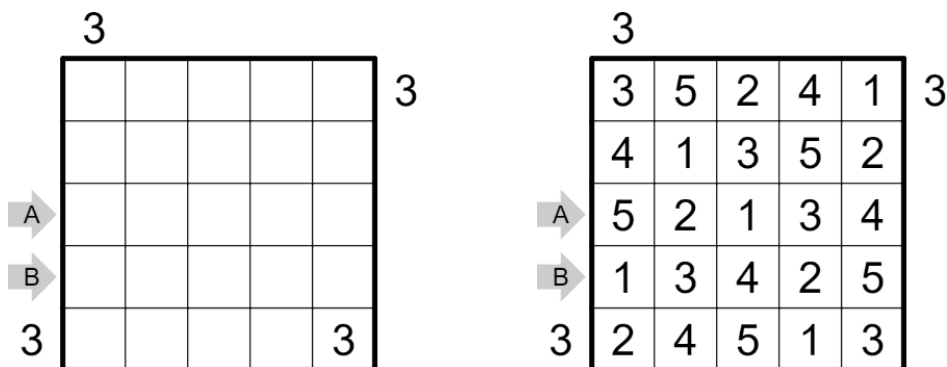
Since the genre is new, the practice puzzle is also newly written for this test. You get to sample this genre for the first time.

## All-3 Skyscrapers (50 + 200 points)

Put a number from the range 1-N into each cell, where N is the length of the grid. Each row/column contains each number exactly once. These numbers in the grid are treated as heights of skyscrapers. Each number outside the grid counts the number of visible skyscrapers when looking into the grid from that direction, with taller skyscrapers hiding shorter ones.

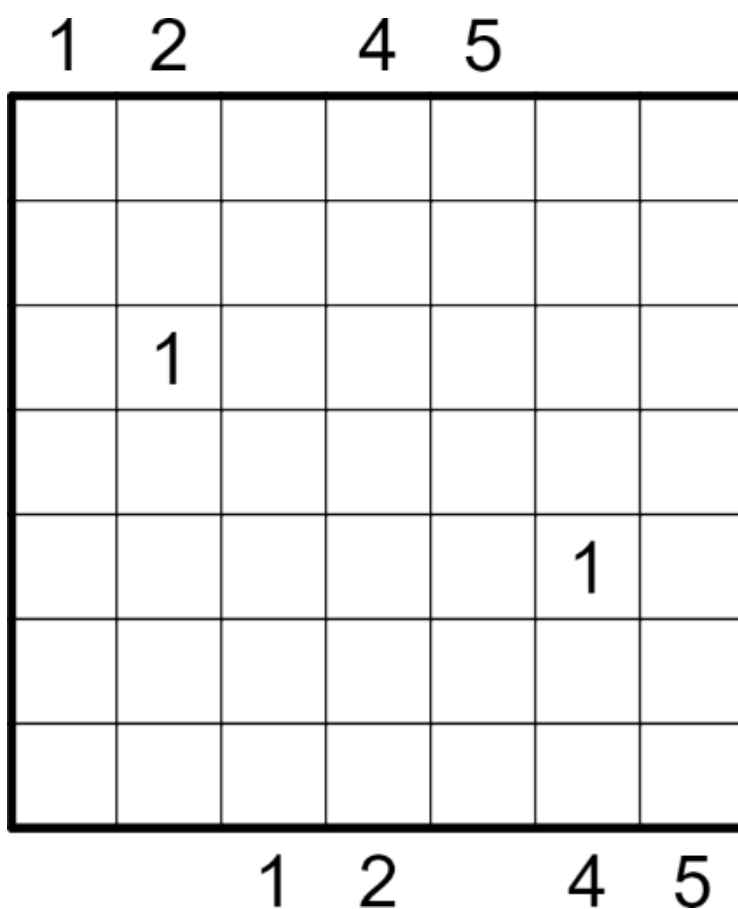
All 3s outside the grid have been given.

» Answer key: Contents of marked lines. (Example: 52134, 13425)



Right after Secret Solver 2017, I and other Puzzlers Club members wrote for the 24-Hour Puzzle Championship, starting our journey in writing for logic puzzle events. We chose the theme "the number 3" as a jab to the fact that most puzzles in 24HPC were themed around 2 and 4. We had 33 puzzles, which was too many for 100 minutes. Puzzlers Club didn't learn for next year, with a 56-puzzle "sprint" (read: marathon) round and an extremely tough 22-puzzle round themed after the Tarot cards. (I was running my own set with Joseph Howard so I didn't supervise these.) We also wrote for 24HPC 2020, but after it got delayed we're not sure the fate of our sets.

Either way, the 2018 set was internally divided into 3 sections. The first section had normal puzzles that just happened to be themed around the number 3; the third section had larger puzzles that are also the same. The second section had vanilla genres paired with variations of them themed around the number 3, and All-3 Skyscrapers was from that section.



The practice puzzle is the same puzzle from 24HPC. It was one of the highest-scoring puzzles in the round (just below a 9x9 Kropki), and it is certainly difficult. But also rewarding.

# Mysterious Fillomino (80 + 200 points)

Divide the grid into regions, each region made of a contiguous area of cells. No two regions with the same area share a side. Each number gives the area of the region it's contained in.

In addition, there is a mysterious variant. This variant is a restriction; all valid solutions in this variant are also valid Fillomino solutions. The variant must be determined from the given example, the unique correct solution, an incorrect solution, and some graphics explaining why the incorrect solution is incorrect. The variants differ between the puzzles.

» Answer key: Lengths of contiguous cells in marked lines. (Example: 1131, 11121)

Example puzzle	Correct solution	Incorrect solution																																																																											
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Back to Secret Solver, it was December 2018 and it's time to write more mysterious puzzles. I was assigned betaveros, one of my long-time internet friends; we even went to International Mathematical Olympiad together in 2012. I knew I had a ton of material to write about; despite not having much experience writing hunt puzzles (my only prior experience was Polyglot, the one explained under Linked Signals, which was also heavily logic-based), I was confident I could write something hunt-y. (It became a 6-puzzle hunt.)

One of the "puzzles", relating to his interests in logic puzzles but with a twist, was titled "Allied Occupation". It was a set of five Fillomino puzzles together with five examples that showed how some solutions are valid while other seemingly valid ones aren't. There are five Fillomino variants, one shown per example, and betaveros had to match each variant to a grid. While the matchmaking aspect is lost in this test, I brought here the fun of discovering what the example is trying to tell you.

The practice puzzle (next page, since I run out of space) is one of the variant/grid combinations from Allied Occupation (the puzzle for the hunt), correctly paired. In fact, this particular Fillomino variant was also [invented by betaveros](#) (spoilers if you go through the link, obviously).

Example puzzle

4		6		
	4		5	
		4		4

Correct solution

4	6	6	6	6
4	3	3	5	6
4	4	3	5	6
3	5	5	5	4
3	3	4	4	4

Incorrect solution

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

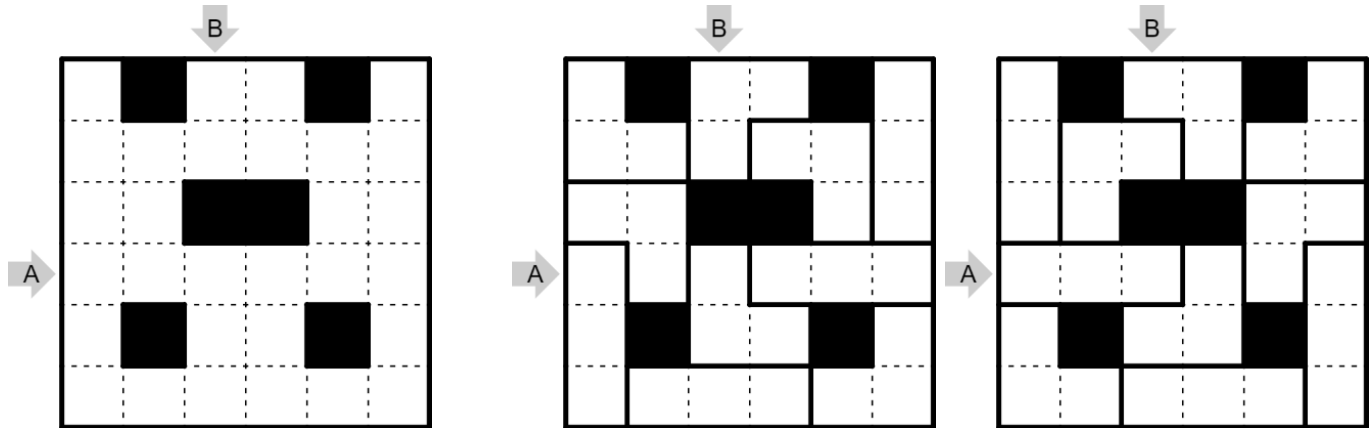
		8	5				
		5	6			5	3
						6	7
	8	8					
	4	5			6	6	
					3	7	

## Almost-Unique Heteromino (40 + 60 points)

Divide the white cells into regions of 3 cells. No two regions that have the same shape and orientation share a side.

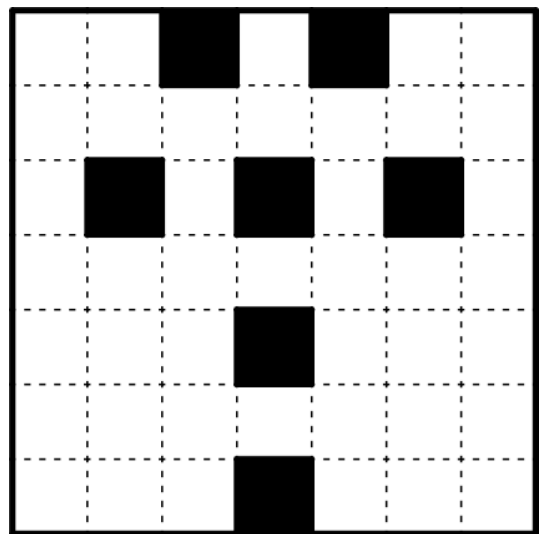
However, the puzzle is not unique. The puzzle is symmetric (either over an axis of symmetry, or over a center of rotation), but the solutions are not. All solutions are obtained from each other by the given symmetry. It's enough to find any solution to the puzzle.

» Answer key: Lengths of contiguous cells in marked lines. Answer for any one solution. (Example: 1113, 221 or 3111, 11111)



A brief history of MIT Mystery Hunts. After writing for MITMH 2015, I moved to a different team, ✈✈✈Galactic Trendsetters✈✈✈. (Yes, the airplane emojis are part of the team name; they are pronounced "whoosh" and "nyeoow" respectively.) In 2017, the hunt lasted a particularly short time compared to the average MITMH. The average hunt usually takes around 48 hours (yes, MITMH is a weekend-long marathon); 2017 only took 15 hours. Either way, our team was particularly unsatisfied and wanted to have more puzzles. So Galactic Puzzle Hunt was born.

Galactic Puzzle Hunt was written by members of our team. I joined the writing team in 2018, writing [Unusual and Strange Puzzle Collection](#), a collection of USPC-inspired logic puzzles. In 2019, I wrote two puzzles. One was about languages (English and Indonesian, specifically) and had no relation to logic puzzles. The other was [Something is Off](#), a collection of logic puzzles each with two solutions. In several cases, meant to alert solvers that something was off, this was very evident from the fact that the puzzle was symmetric but the solution obviously couldn't be. (For example, a Skyscrapers puzzle was rotationally symmetric.) Heteromino was one of these alerting puzzles, and I took the idea here into this test.

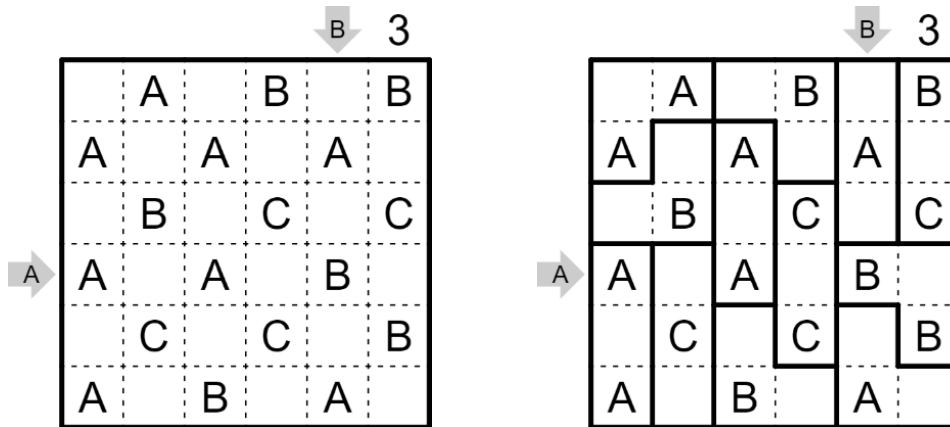


The practice puzzle is the Heteromino puzzle that appeared in [Something is Off](#), except now you know to expect two solutions.

## Greener Grasses (50 + 100 points)

Divide the white cells into regions of the indicated size (top-right of the grid). Whenever two regions share a side, each region has something the other does not: a symbol that the other region has less of. (For example, a region containing AA and AB may share a side: the AA region has more A's than the other, and the AB region has more B's than the other. But AB and B may not share a side; the B region doesn't have anything the AB region doesn't have.)

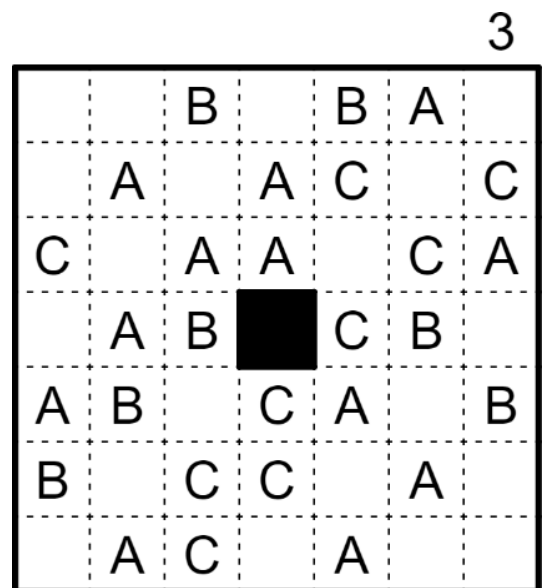
» Answer key: Lengths of contiguous cells in marked lines. (Example: 11112, 312)



Also described under the entry for All-3 Skyscrapers, after 24-Hour Puzzle Championship 2018, I went to write my own set with Joseph Howard while Puzzlers Club did two sets based on the Tarot cards. My set was themed after the seven sins; we had 3 puzzles for each of the 7 sins. In some cases, they are just silly rethemes (we named Doppelblock to Sum Sandwich for gluttony), some are variants (Lovers Nurikabe for lust, where each island has two clues that add up to the island's size), and some are brand new genres.

Greener Grasses was one of the new genres (for envy, obviously, in the sense of the idiom "the grass is always greener on the other side"). Joseph Howard pitched this idea, likely after looking that we need something more for envy. I don't quite remember why we didn't use his puzzle, but either way, I wrote one that appeared in the test.

The practice puzzle is the same puzzle from 24HPC. Neither I nor Joseph has touched this genre after 24HPC, and to my knowledge, nobody else has created any either, so this is the perfect opportunity to bring this unique genre out from the dead.

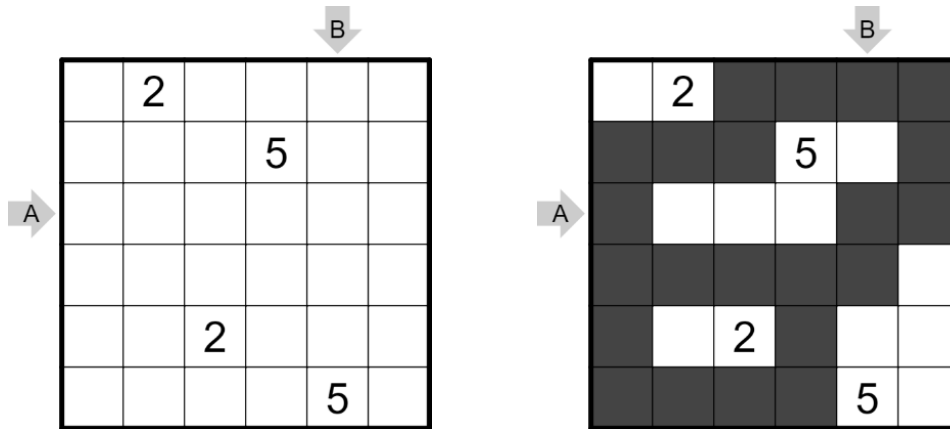


## No-Touch Nurikabe (30 + 140 points)

Shade some cells black. All black cells form a single contiguous area. No 2x2 area is fully black. Each contiguous area of white cells forms an island. Each island contains exactly one number, which indicates its area.

No island touches another island, even diagonally.

» Answer key: Lengths of contiguous black/white segments in marked lines. (Example: 132, 1122)

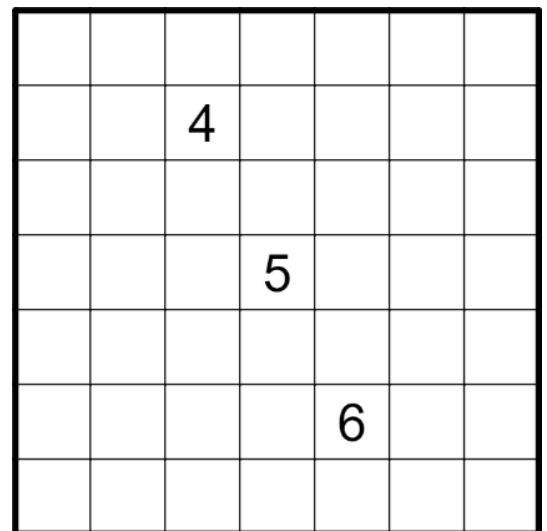


I started a [puzzle Twitter account](#) around mid-2018. I haven't posted much, but there have been several interesting theories. [One of them](#) talks about the so-called "penalty theory" in dynasty genres with a lot of black cells; [another one](#) is a Nurikabe puzzle showcasing an argument I now call "intersection counting", used when a Nurikabe puzzle has a particularly small sum of givens.

In short, the argument goes as follows. Look at the intersections of gridlines; call an intersection "covered" if it's adjacent to an island. Then all intersections not on the border must be covered; an intersection that is not covered will form a 2x2 area of black cells. On the other hand, an island of size N covers at most 2N+2

intersections. Therefore, if the total number of intersection covers allowed by the islands is small, it's difficult to cover all the necessary intersections. There are three ways to waste intersection covers: covering an intersection on the border (that intersection doesn't need to be covered), having a 2x2 white area (the island has fewer intersection covers), or having two islands touch diagonally (an intersection is unnecessarily covered twice). The waste must be minimized, or else you don't have enough coverage for the internal intersections.

The practice puzzle is taken from the tweet and is actually solvable as a standard Nurikabe. Despite the small size, I believe you need this argument to make any logical progress; the other option is to do a lot of bifurcation.



## Short Answer (25 points)

Provide the answer to the question. The answer is a number. Basic English knowledge and a bit of trivia will be required. You will not need to look things up online, although you are allowed to do so.

» Answer key: Answer to the question. (Example: 2525)

What is the total sum of points in this test?

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I knew I wanted to include 25 puzzles for the test; the question is, what genres and what distribution. Originally I wanted to go with entirely new genres, in the same vein as EVIL (described under Short Yajilin). Then I moved to some existing genres (so newer people can sink get into solving some more familiar genres) and some original genres (because this test is themed after me). And then I hit on the idea of genres I've done in the past one way or another.

The distribution also went through many iterations. I started with "12 genres at 2 puzzles each plus a special puzzle at the end", and went through several possibilities before coming back to the start. The problem is, what is this special puzzle going to be? At first, I had the idea of some complex puzzle, like a linked/matchmaker puzzle of several small grids. But I decided to go the other way around: a trivia question that is not culture-neutral. What is this puzzle doing in such a test? Either way, I'm fairly confident the "puzzle" will be sufficiently fair.

There is no practice puzzle since I want to keep things a surprise.



## Summarized rules

This summary is intended for people that are already familiar with many puzzle genres appearing in various competitions.

**Answer keys:** Number placement: contents of lines. Dynasty: leftmost black cells. Shading: Lengths of same-color segments. Loop: Lengths of loop segments. Region division: Lengths of cell segments separated by region boundaries.

**Surveyors Heyawake:** Heyawake, but in regions containing clues, one number is a Heyawake clue and all others are Minesweeper clues (counts itself if shaded).

**Tetromino Slitherlink:** Slitherlink. Each tetromino contains 0, 1, 2, 3 in some order.

**Short Yajilin:** Yajilin. Whenever the loop goes straight, it turns before and after.

**Linked Signals:** Change each dashed circle black or white so the same grid is solvable as Signal Loop (straight through white, doesn't visit black) and Antisignal Loop (turns on black, doesn't visit white).

**Poset Futoshiki:** Futoshiki. Numbers form a poset.

**Maximal Archipelago:** Shade a dynasty. The dynasty is maximal: you cannot shade any other square without breaking dynasty rules. Numbers count squares in row/column. Crosses are not shaded.

**Abacus Kurotto:** Kurotto. Abacus line counts lengths of black segments separated by white cells (like Nonogram); all abacus lines have the same sequence of lengths.

**All-3 Skyscrapers:** Skyscrapers. All 3s outside the grid are given.

**Mysterious Fillomino:** Fillomino, with an unknown variant. Study the variant from the given example. The variant is a restriction (all valid solutions are also valid Fillomino solutions).

**Almost-Unique Heteromino:** Heteromino (divide into triminoes, same shape+orientation are not adjacent). The puzzle is not unique; solutions are obtained from each other through symmetry.

**Greener Grasses:** Divide into regions of the indicated size. Among two neighboring regions, neither has contents that are completely contained in the other.

**No-Touch Nurikabe:** Nurikabe. Islands don't touch diagonally.

**Short Answer:** English trivia question. The answer is a number.