

# **GAS Leak**

Genuinely Approachable Sudoku from the CtC Discord  
Volume 11: December 24, 2021 - January 12, 2022



Good morning, friends! Welcome to a new year and a very interesting edition of GAS Leak. In this 11th edition, you'll find our end-of-year celebrations, plus something you've never seen before in GAS: puzzles from guest setters! We spent the first full week of 2022 solving brilliant and beautiful sudokus from our sister team over at GAPP (Genuinely Approachable Pencil Puzzles), while we shared pencil puzzles over in their channel. The bonus puzzles at the end of this document are the result of that collaboration: you'll find three unpublished puzzles from our own team, *and* all of the extra puzzles that the GAPP team wrote for us but didn't publish. It's a big one, so put on your coziest solvin' socks and enjoy!

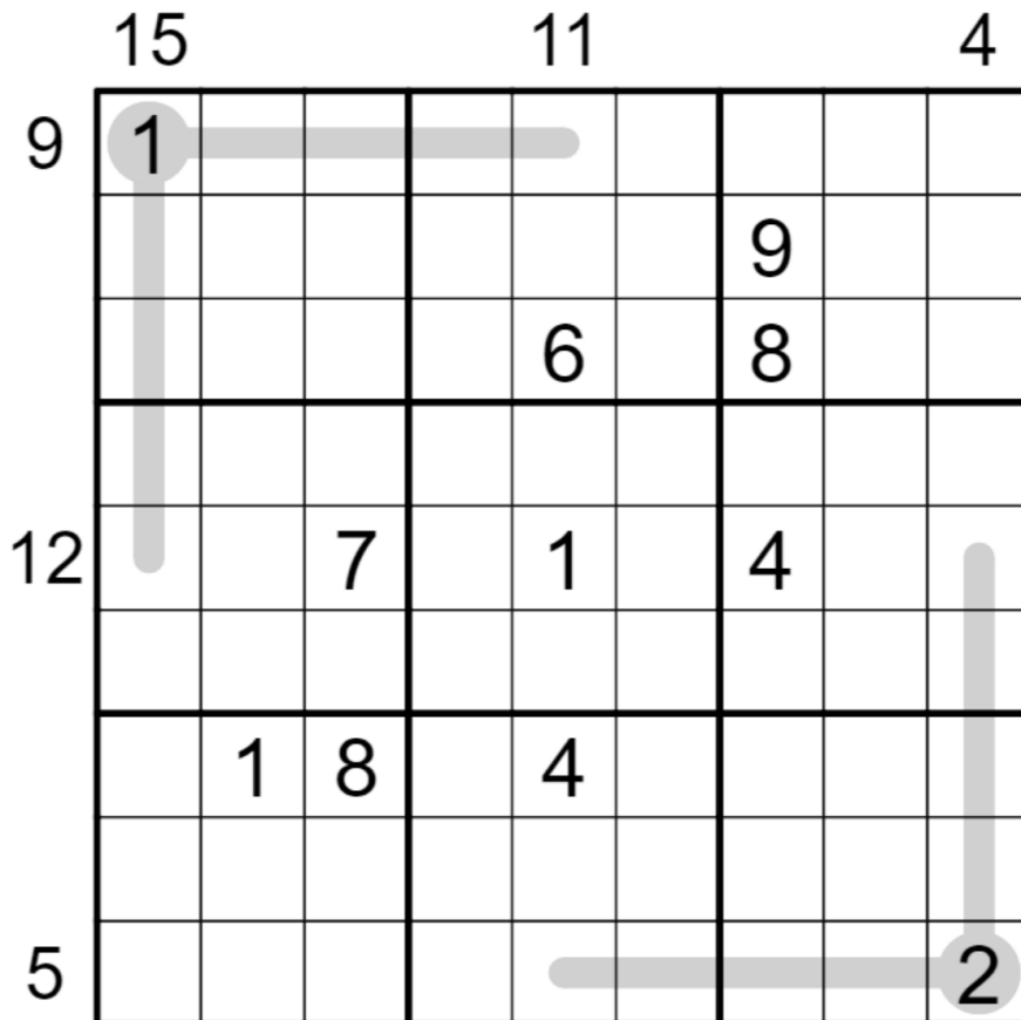
- *Clover*

## December 24, 2021: Thermo Sandwich

Clover

Ah, the delicious grilled cheese sandwich. Or cheese toastie, if you find yourself on the wrong side of the Atlantic. 🤔 Warm, gooey, a staple of Dutch culture, and pairs well with tomato soup, just like today's GAS: a thermometer sandwich!

Digits along a thermometer must strictly increase, starting from the round bulb. (For instance, a thermometer could read "2 4 5 7 8".) A value outside of the grid is a sandwich clue: it tells you the sum of the digits between the 1 and the 9 in that row or column, not including the 1 and 9 themselves.



f-puzzles: <https://f-puzzles.com/?id=y5gxqqtk>

CtC: <https://tinyurl.com/3xxaw4fe>

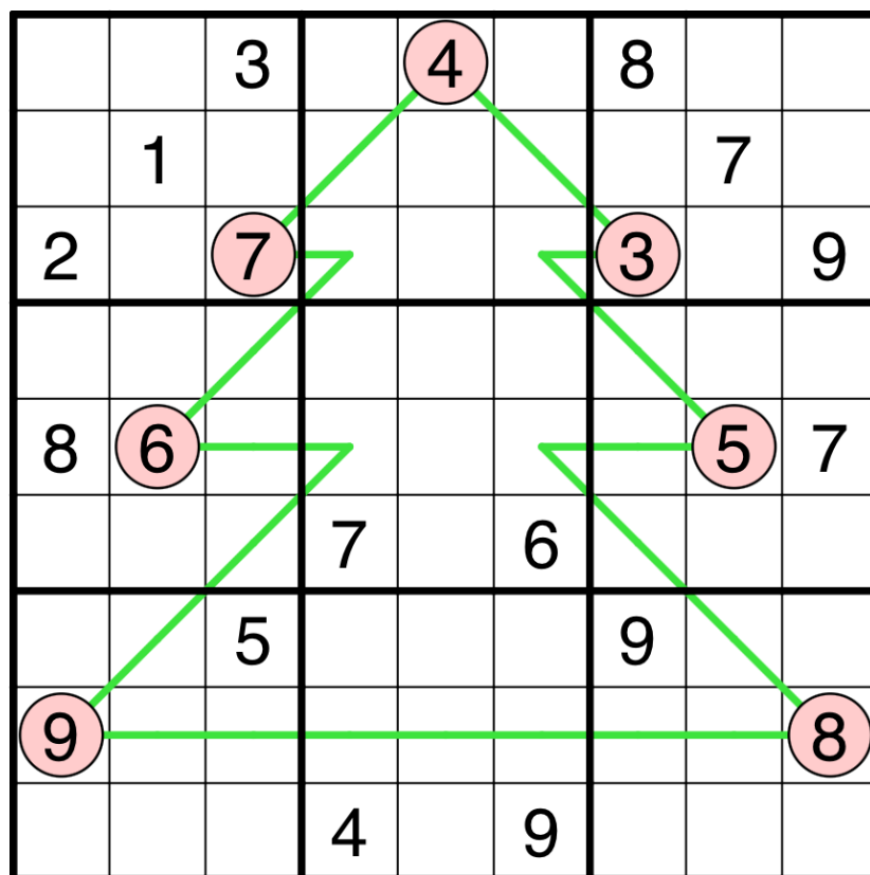
## December 25, 2021: Christmas Sudoku

Sam Cappleman-Lynes

Happy Christmas to those of you who celebrate it! Happy 25th December to those who don't! Both of you can have this fun puzzle to solve although the symbology in it is probably more significant to one group than the other 😊

Normal Sudoku rules apply. In addition, if a line connects two circles, then the digits on that line must all be different and must also be strictly less than the values of both circles. For example, if the two circles contained a 6 and a 9, then the digits on the line connecting them must all be distinct digits from the range 1-5.

Note for new solvers: If you have trouble at the end of your solve, triple check that you've used the "digits on a line must all be different" rule!



f-puzzles - <https://f-puzzles.com/?id=yrn98pa6>

CtC - <https://tinyurl.com/2p8bmphb>

Penpa - <https://git.io/JyYZt>

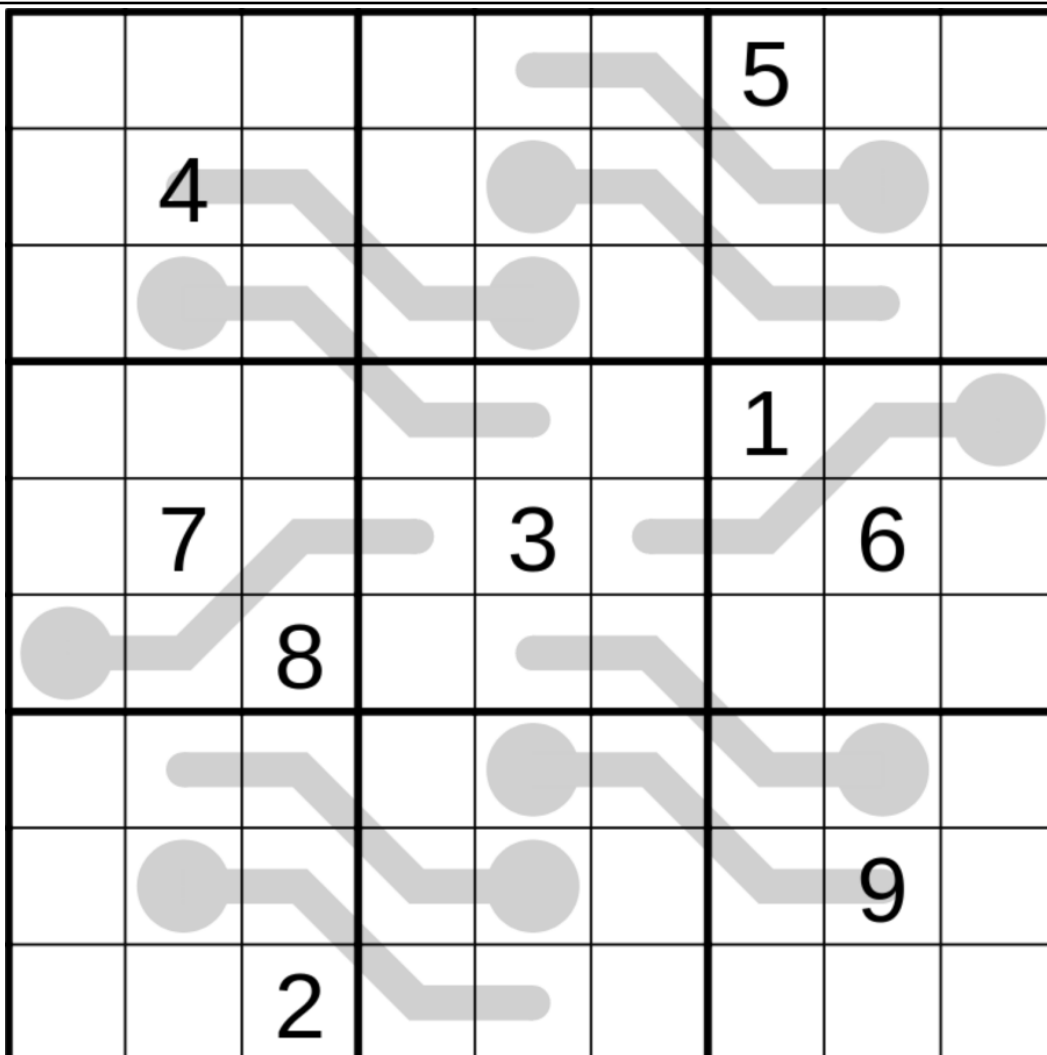
## December 26, 2021: Inferno

Philip Newman

I hope everyone had a Merry (or Happy, but not both, that's far too much cheer) Christmas! Today's puzzle has nothing whatsoever to do with Christmas, but hopefully it will keep you warm (if you are somewhere where that is a concern - it was 80°F here yesterday).

Today's GAS is a Thermo Sudoku! Normal sudoku rules apply. Digits along thermometers must strictly increase from bulb to tip.

Note for new solvers: "strictly increase" means that the digits must get larger with every step along the thermometer and can never stay the same. Digits along a thermometer don't necessarily have to be consecutive.



Play on f-puzzles: <https://f-puzzles.com/?id=y6nrlqf4>

Play on CTC App: <https://tinyurl.com/3vzesjhy>

## December 27, 2021: Lockout Lines

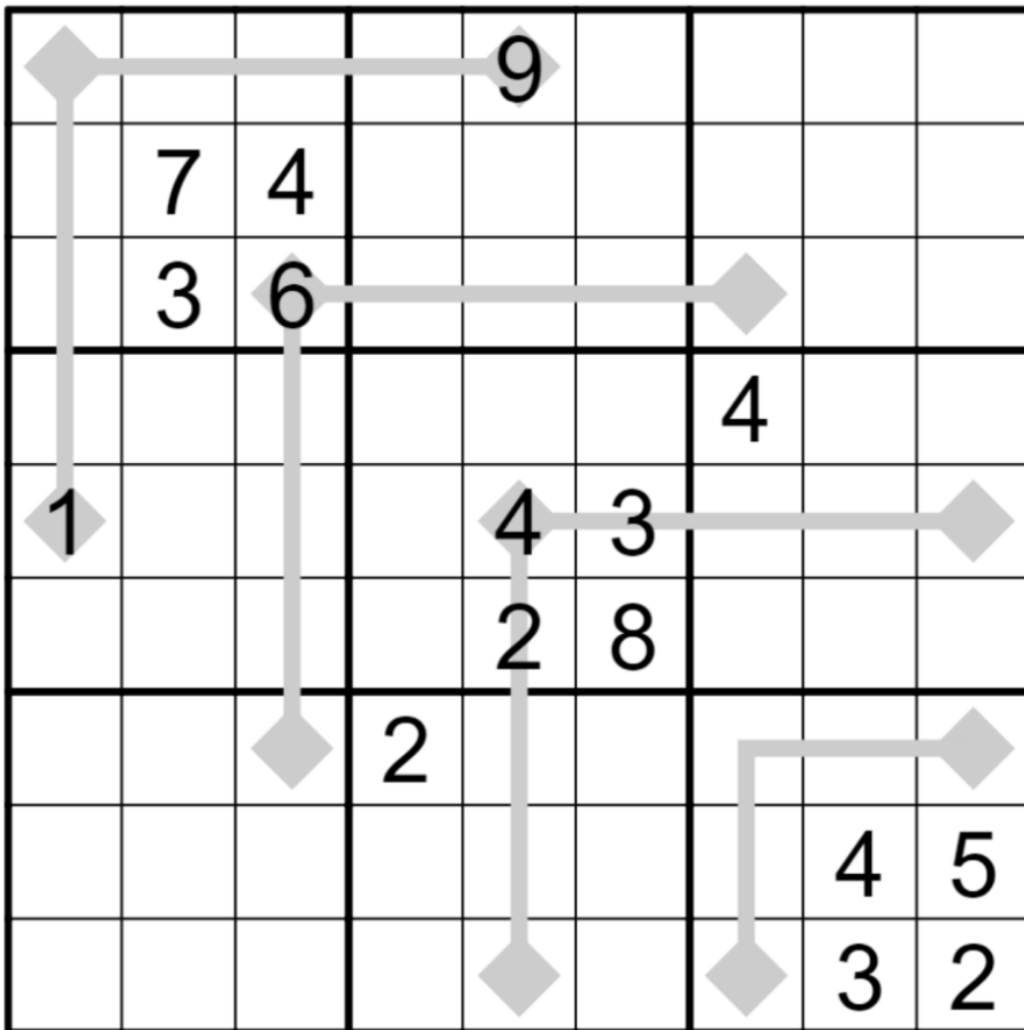
Clover

Today's GAS is a lockout lines sudoku! Lockout lines is a constraint that was developed by setters Riffclown and Tallcat, but hasn't appeared in GAS... until today.

Normal sudoku rules apply. The grid also contains some cells that are marked with diamonds. If two diamonds are joined by a line, then two things must be true:

1. The digits in the diamonds differ by at least 4 (for instance, 4 and 8, or 1 and 7.)
2. Digits on the connecting line may NOT be equal to, or in between, the digits in the diamonds. For example, if two diamonds contain the digits 4 and 8, then a line connecting them could contain any combination of 1, 2, 3, and/or 9, in any order, but not any other digits.

Editor's note: longtime GAS tester and certified Fast Solver bakpao was kind enough to walk us through his solve of this puzzle, and some of his thoughts on testing for GAS, in [this video](#).



f-puzzles: <https://f-puzzles.com/?id=yyeyjb84>

CtC: <https://tinyurl.com/2p8jmd4x>

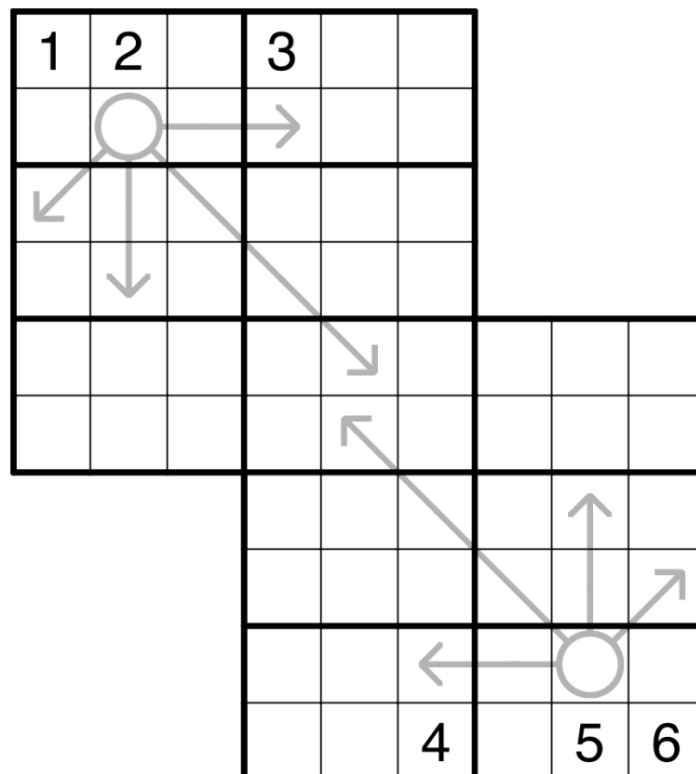
## December 28, 2021: Small-Scale Samurai

Sam Cappleman-Lynes

If you're anything like me, you will have eaten far too much food over the last few days and the thought of eating another mouthful is a daunting prospect. With that in mind, today's GAS is only a tiny little bitesize thing, suitable to wind down with as the festive season slows.

This puzzle consists of two overlapping 6x6 grids. In each of those grids, normal 6x6 Sudoku rules apply. In addition, digits along an arrow must sum to the value in the arrow's circle.

Note for new solvers: two digits only see each other if they share a grid. For instance, the digits at the top of column 5 are only in the top left grid, and the digits at the bottom of column 5 are only in the bottom right grid. Since they don't appear in the same grid, they can safely have the same value (even though it looks like they're in the same column.)



Penpa: <https://git.io/Jy26o>

**December 29, 2021: Whirlwind**

Philip Newman

*It's the last Philip puzzle... of the year...*

*With some "interesting" posting*

*And eggs will be boasting*

*Their times with good cheer*

*It's the last Philip puzzle of the year...*

*It's the last Philip puzzle... of the year...*

*There'll be some pencilmarking*

*As you are embarking*

*Perhaps with some feeeeeaaaar*

*It's the last Philip puzzle of the year!*

Today's GAS is a Classic Sudoku! Normal sudoku rules apply, and that's it!

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

Play on f-puzzles: <https://f-puzzles.com/?id=y4yw624>

Play on CTC App: <https://tinyurl.com/mtsrp89y>



## December 30, 2021: High/Low Sums

Clover

[Oooooohhhhhh, another Clover GAS wouldn't do us any harm 🙌](#)

Oh another Clover GAS, wouldn't do us any harm 🙌

Oh another Clover GAS, wouldn't do us any harm 🙌

And we'll all hang on behind!

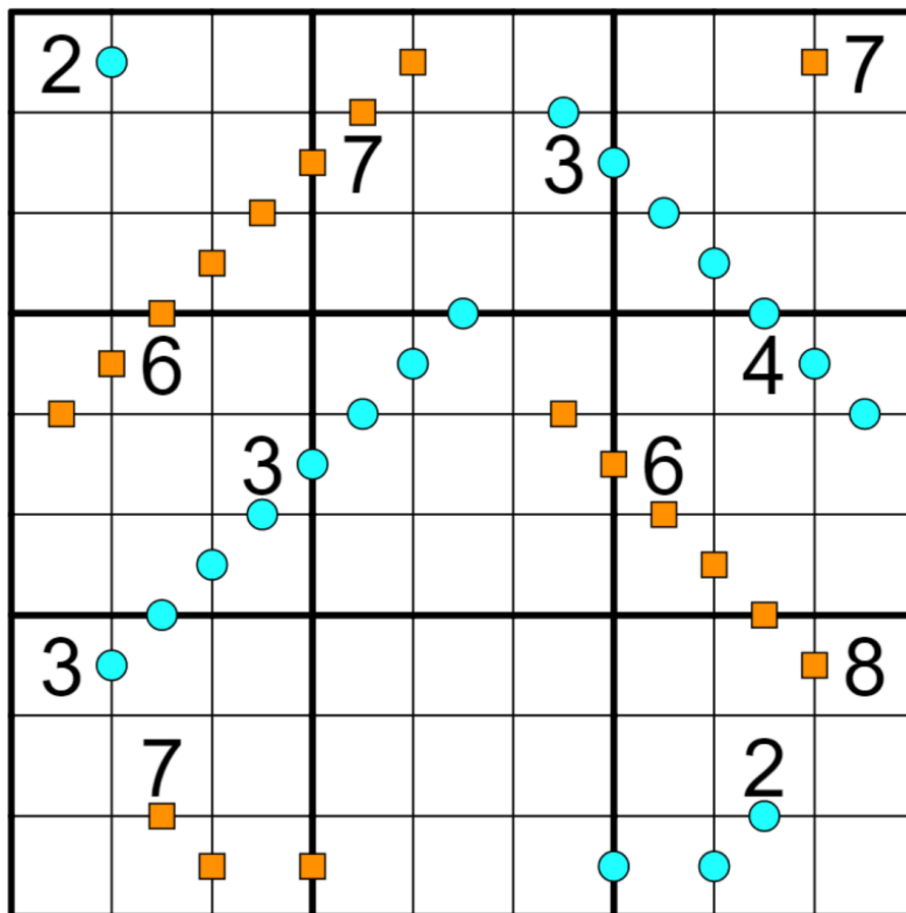
Rooooo the old puzzle train along 🙌

Roll the old puzzle train along 🙌

Roll the old puzzle train along 🙌

And we'll all hang on behind!

(Normal sudoku rules apply. Also, if an orange square appears between two cells, then those two digits must sum to 15 or more. If a blue circle appears between two cells, then those two digits must sum to 5 or less. Not all possible squares/circles are necessarily marked. )



f-puzzles: <https://f-puzzles.com/?id=y3ll2m5s>

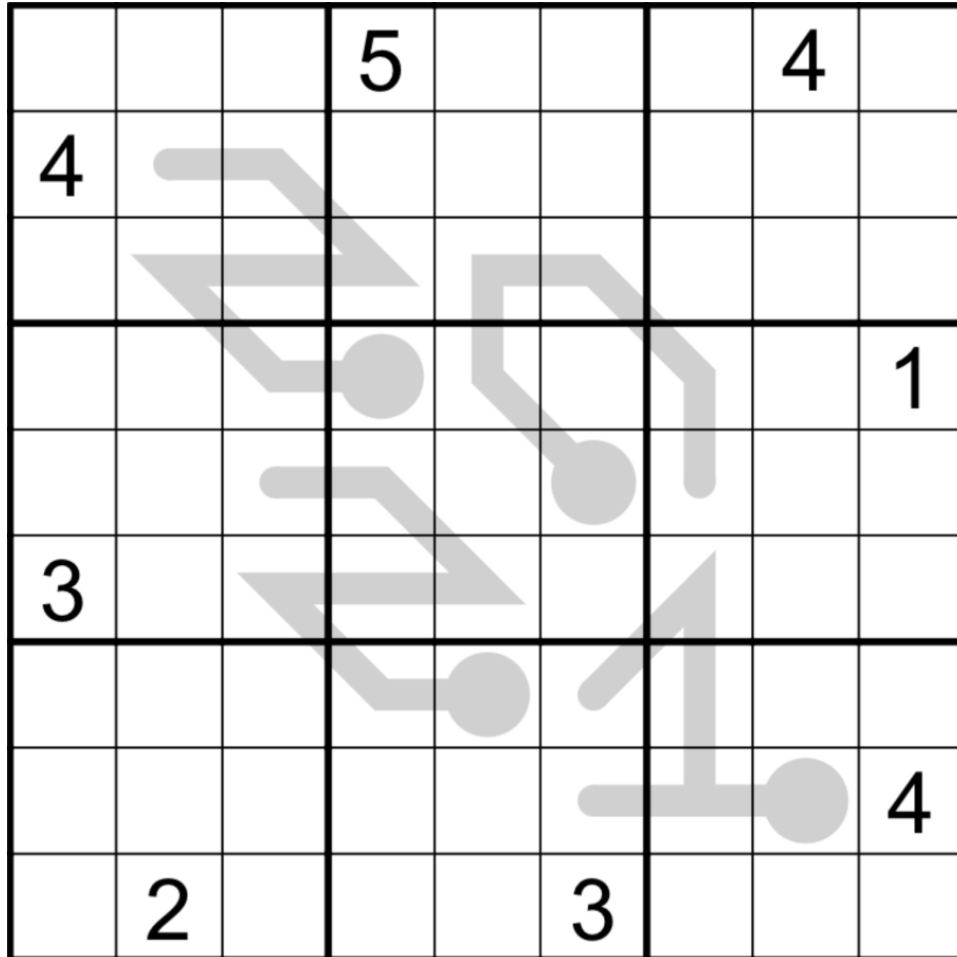
CtC: <https://tinyurl.com/yz32mp2u>

## December 31, 2021: Thermo

Sam Cappleman-Lynes

Forget the last Philip puzzle of the year, this is the last GAS puzzle of the year. Let's see out 2021 in style with this Thermo Sudoku.

Normal Sudoku rules apply. Along a thermometer shape, numbers must increase, starting from the bulb.



f-puzzles - <https://f-puzzles.com/?id=yyqsgjft>

CtC - <https://tinyurl.com/2nvp5jpi>

Penpa - <https://git.io/Jy5yn>

**January 1, 2022: Nova**

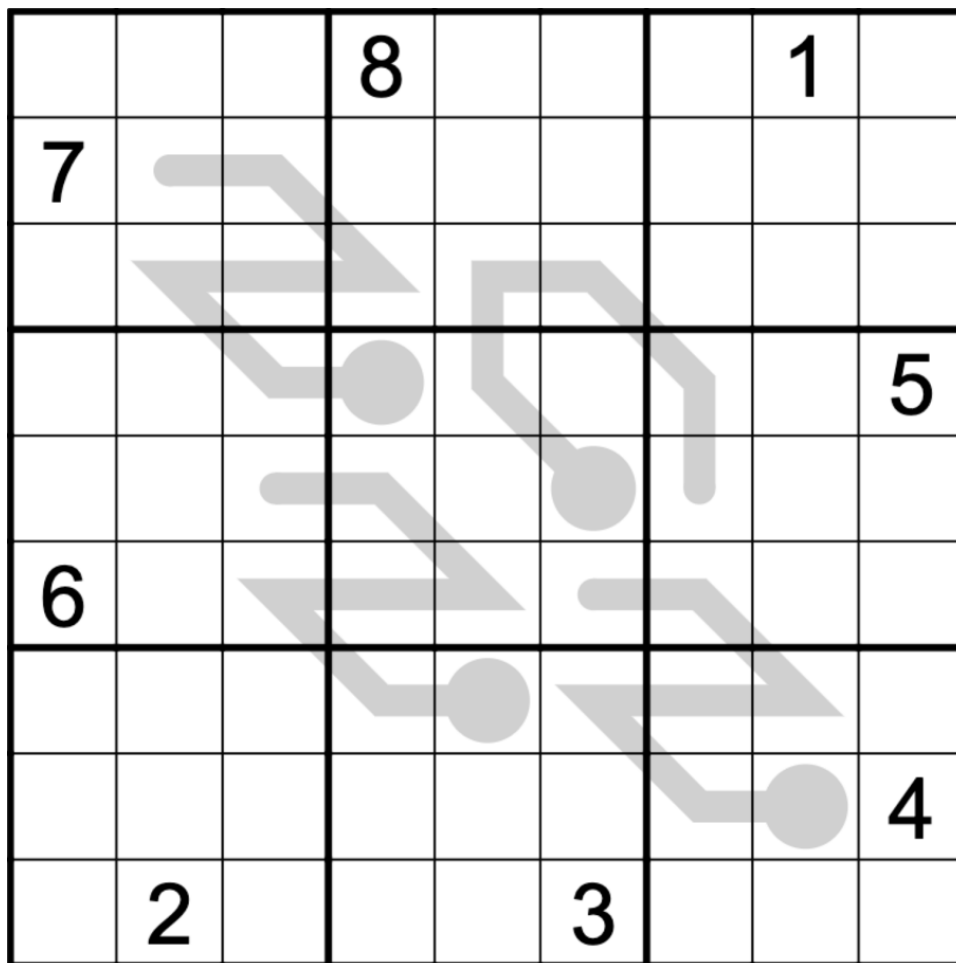
Philip Newman

My new year's resolution this year is to provide completely original GAS for you to solve. In that spirit, here is a Thermo Sudoku with a never-before-seen arrangement to celebrate the start of 2022!

What's that? Sam posted something similar yesterday? It can't be that similar, yesterday wasn't 2022! I'm sure it's just a coincidence, Sam would never copy my completely original puzzle.

Normal sudoku rules apply. Digits along thermometers must strictly increase from bulb to tip.

Note for new solvers: "strictly increase" means that the digits must get larger with every step along the thermometer and can never stay the same. Digits along a thermometer don't necessarily have to be consecutive.



Play on f-puzzles: <https://f-puzzles.com/?id=y5642b82>

Play on CTC App: <https://tinyurl.com/2p8wkvbp>

## January 2, 2022: Classic

Jovi

My head hurts... I woke up and I wasn't sure where I was... I know it's my turn to post GAPP, but something feels off.

I found this puzzle while searching for hints about what happened, and it looks to be a Sudoku, so GAPP definitely isn't the right place for it. Perhaps you could help me figure out what to do with it?

Today's GAS is a Classic Sudoku!

Rules: Normal Sudoku rules apply (place a digit from 1-9 into every cell such that no digits repeat in any row, column, or thickly-outlined 3x3 box).

		1				4		
			1		4			8
3			2		5			6
	3	2			8	5	6	
	4	6	7			3	1	
4			6		3			1
7			5		2			
		5				2		

Play on f-puzzles: <https://f-puzzles.com/?id=y5v6lzps>

Play on CtC: <https://tinyurl.com/57522rrs>

## January 3, 2022: Kropki Pairs

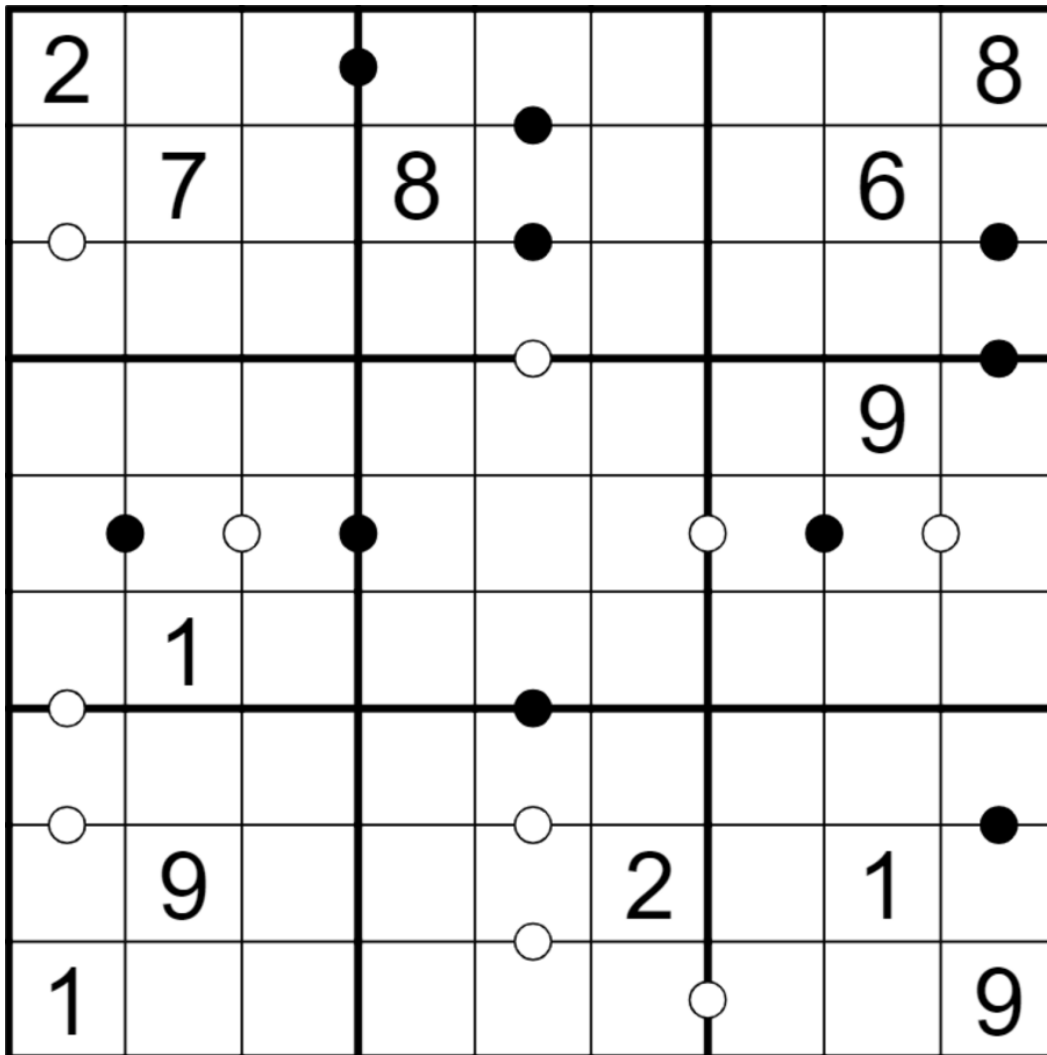
Tyrgannus

Ok, ok this really is strange. I just received some DM's from Clover, Jovi\_al, and Sam. Apparently they all woke up in weird places with headaches, and what makes matters even weirder is that I did too! Something is totally amiss, and this mystery is spicy. Unfortunately, I don't have any good leads yet on why we're all being transported to different channels, only simple conjectures. Like simple seasoning. Mmmmm.....seasoning.....salt and pepper....

Wait, is this a sudoku in my pocket!? Huh, it's absolutely covered in salt and pepper! Truly strange! 🤪

Today's Gas is a Kropki Pairs Sudoku!

Rules: Normal sudoku rules apply. Cells separated by a black dot have a ratio of 1:2. Cells separated by a white dot must contain consecutive digits. Not all dots are given (No negative constraint)



F-puzzles: <https://f-puzzles.com/?id=yyw8fp9c>

CtC: <https://tinyurl.com/2kmzwb5>

## January 4, 2022: Search Nine

Freddie Hand

What's this? I am several hours ahead of schedule? Surely this is too good to be true? Oh no, I've gone and spilled arrows on my fillomino! Now I don't know what those givens are supposed to be. I do remember that the givens I put down were 3, 3, 3, 3, 3, 3, 3, 3, 3, 6, 7, 10 but the order has completely vanished from my memory. I'm sure our trusty solvers will figure it out.

Today's GAS is a Search Nine Sudoku!

Rules: Normal sudoku rules apply. Also, digits in arrow cells tell you how far it is to the digit 9 in that direction.

For instance, if a 1 appears in an arrow cell, there will be a 9 immediately next to that cell, in the direction the arrow is pointing. If a 2 appears in an arrow cell, there will be a 9 two steps away, and so on.

Editor's note: Some platforms have difficulty displaying the style of arrows used in the original puzzle image. If you see placeholder characters instead of the arrows, try the alternative links provided on the next page!

Editor's note: Yes, this puzzle can also be solved as a fillomino! Replace the arrows with the givens described in Freddie's intro - you need to figure out where to put them! - and then solve using standard fillomino rules:

Divide the grid into regions. If a clue appears in a region, then the region must be the size represented by that clue (for instance, if a 6 clue appears in a region, that region must consist of 6 orthogonally connected cells.) Regions of the same size may not touch each other orthogonally, but they may touch diagonally. A region can contain two or more clues (as long as they have the same value) or no clues at all.

	↓	→				6	7	
	→						5	
→	→	→				7	8	4
			↑		7			
↑								5
→		↑				5		1
		↑	↑		3	8		

f-puzzles: <https://f-puzzles.com/?id=y65eomhe>

or use this link with different style arrows: <https://f-puzzles.com/?id=yyunh7wo>

CTC: <https://tinyurl.com/yd7277wa>

or use this link with different style arrows: <https://tinyurl.com/ncyzdswc>

Penpa: <https://git.io/JSYjs>

## January 5, 2022: XV (negative constraint)

Eric Fox

I'm starting to get used to this place, but we can't stay here forever. I think we've been given some clues on how to escape back to normal life, though: There are plus signs  $+$  and carets  $\wedge$  all over! Wait a minute... Let me spin these around... I think it must be an XV Sudoku!

Normal Sudoku rules apply. Every pair of orthogonally adjacent cells which sum to 10 are marked with an X. Every pair of orthogonally adjacent cells which sum to 5 are marked with an V.

(For clarity, all Xs and Vs are given.)

Note for new solvers: **This puzzle has a negative constraint!** This is unusual for GAS, and without it, you won't really be able to get started, so be careful! If there **isn't** an X or V between two cells, then those two cells **don't** sum to 10 or 5, and you can eliminate possibilities based on that.

		4	8	1				
	1				2	6		
							7	
		x	x	x				
	x					2		
							v	
	9				v	v	v	
	5							
		2	1				6	
				5	7	4		


f-puzzles: <https://f-puzzles.com/?id=y5xhgfn>

CTC: <https://tinyurl.com/msw68sfp>



## January 6, 2022: Coordinate

Shye





As much as I enjoy Sudoku, I'm with Eric, we need to find a way to reverse this switchup!   
The GAS team know what they're doing far more than us. I have this puzzle on me, which might show us where to go, but GAPP is certainly not the place for it, I need the Sudoku experts for this one. Care to take a look?

Today's GAS is a Coordinate Sudoku!

Rules (in which normal Sudoku applies!): The digits X, Y and Z in pill shapes (reading left to right) signify that  $rXcY = Z$

For example, if a pill read [382], then the cell in row 3 and column 8 would have to be the digit 2



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

Play on F-Puzzles: <https://f-puzzles.com/?id=yyg9nbd>

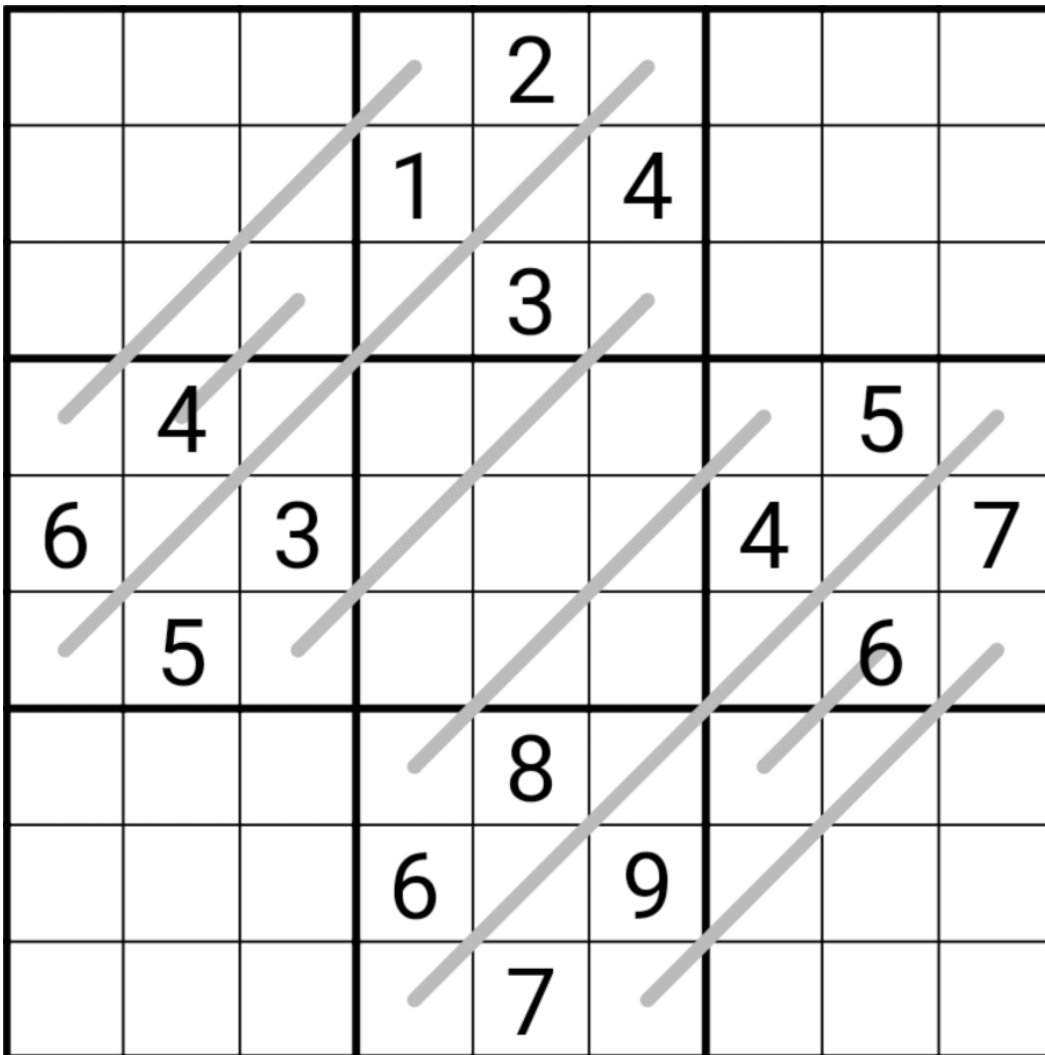
Play on CTC App: <https://tinyurl.com/y8u94mnk>

## January 7, 2022: Doubling Lines

Jovi

We're starting to piece together just what happened. I found some clues that indicate that some weird New Year's Eve goblin got mad at me for... something (still figuring that out) and decided to play a little trick on me and the rest of the crew. Here's hoping Tyrgannus finds the keys to the GAPP factory tomorrow! In the meantime, I hope you enjoy this Doubling Lines Sudoku I found while looking for the keys :]

Rules: Normal Sudoku rules apply. Every digit that appears on a gray line must appear exactly twice along that line.



Play on f-puzzles: <https://f-puzzles.com/?id=y6zamjk7>

Play on the CtC Webapp: <https://tinyurl.com/5d6mx8ut>

## January 8, 2022: Variant Samurai

Tyrgannus

I think the best chance we have of returning everything to normal from the mischievous spiritual influence is not to be fractured and apart, but come together. I think if we all come together, we can defeat the evil Nurikabe, and in turn, transport back to the channel we all belong. It's going to take a lot of courage, but I believe if we combine our grids, we can make a puzzle strong enough to counteract the magic. We must be strong and fearless. We must invoke the power of the samurai sudoku!

Today's GAS is a Variant Samurai Sudoku!

Rules: Place the digits 1-4 in every cell of all five sudoku grids. Four of the five sudoku grids are coloured and in the four corners of the larger puzzle, while the fifth grid is in the center and also is a 4x4 comprised of four 2x2s. The central grid has two cells from each of the four corner grids as well as 8 cells unique to itself. Digits only make eliminations in the grid they are in and thus it is possible to have the same digit only a couple cells apart if the two cells belong to different 4x4 grids.

**Rules for each variant, and the puzzle itself, appear on the following page!**

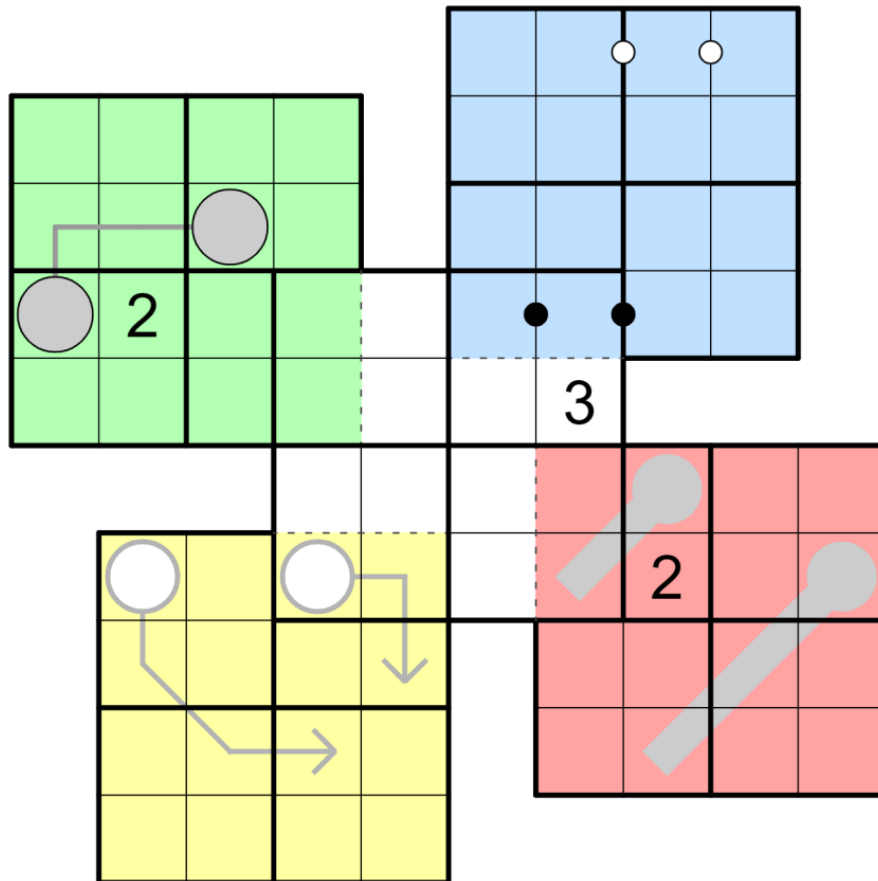
Note for new solvers: two digits only see each other if they share a grid. For instance, the digits at the top of column 4 are only in the top left grid, and the digits at the bottom of column 4 are only in the bottom left grid. Since they don't appear in the same grid, they can safely have the same value (even though it looks like they're in the same column.)

**Between Lines (Top Left)** Digits on between lines must have values between those of the digits on the two ends of the between lines.

**Kropki Pairs (Top Right)** Cells separated by a black dot have a ratio of 1:2. Cells separated by a white dot have consecutive digits. Not all dots are given (No negative constraint)

**Arrow (Bottom Left)** Digits along arrows must sum to the digit in the bulb of that arrow

**Thermometer (Bottom Right)** Digits along thermometers strictly increase from the bulb to the end.



## January 9, 2022: Slot Machine

Clover

Being snatched up by mischievous puzzle-loving djinns and transported to daily-pencil-puzzles has given me a new perspective on life. Life's for the living, and you never know when you're going to find yourself in the puzzle dimension unexpectedly, so why not spend the new year indulging all of your vices? Sudoku solving, for example! But not gambling, of course - that's actually bad for you. 😊

Today's GAS is a slot machine sudoku! Normal sudoku rules apply. Also, each grey stripe contains exactly the same sequence of nine digits in the same order. The sequence can start at any point along a stripe, and when it reaches the bottom, it wraps around again to the top. For instance, if the first blue stripe contains the digits 123456789 from top to bottom, the other two could contain 345678912, 789123456, etc.

		2				6		
		1				7		8
3				1				5
			9					
				2				
					6			
7				3				1
6		9				3		
		8				2		

f-puzzles: <https://f-puzzles.com/?id=y5u322fd>

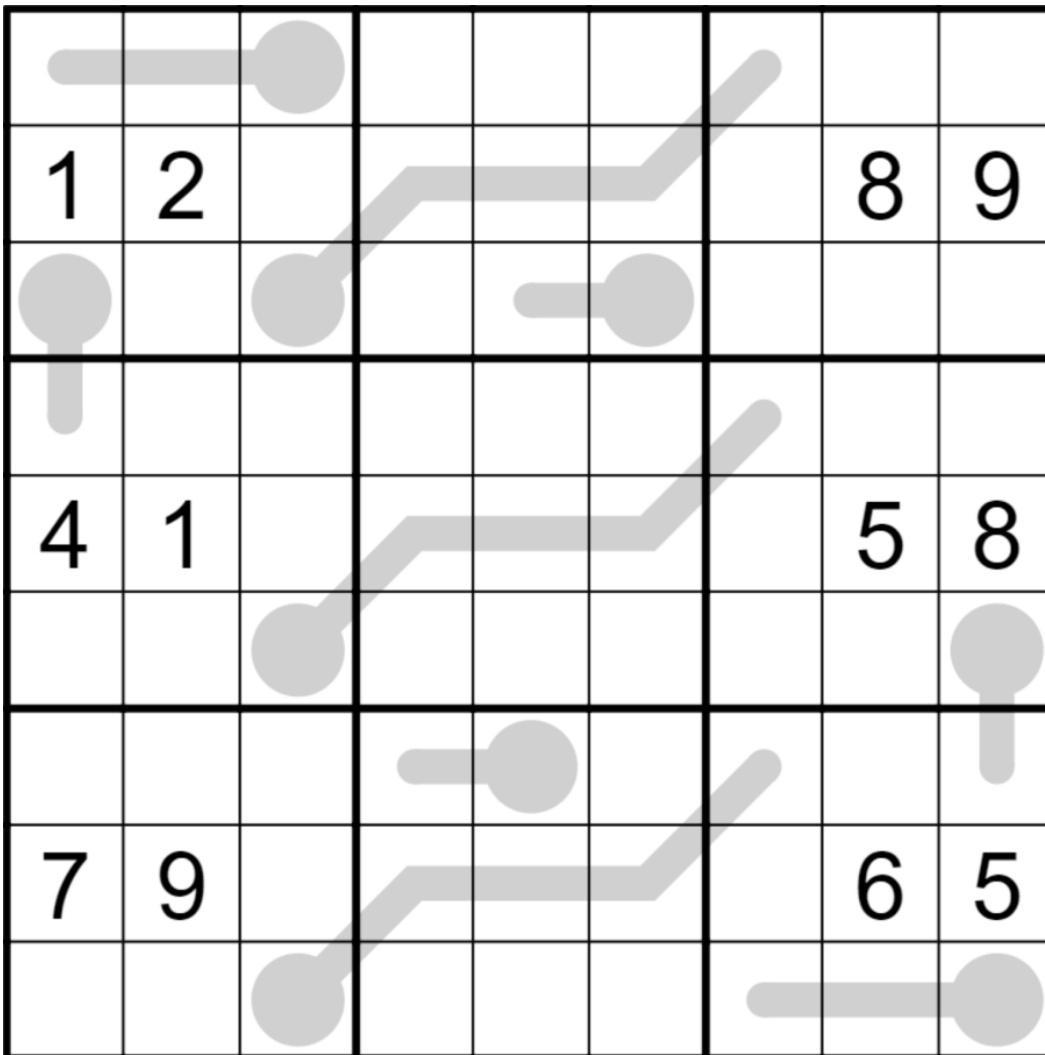
CtC: <https://tinyurl.com/mp9tvd6t>

## January 10, 2022: Thermo

Sam Cappleman-Lynes

Good afternoon, solvers! It's nice to be back in familiar company where there are no loops to draw or cells to shade and we have nothing to worry about except a 9x9 grid and the digits 1-9 and a seemingly endless list of variants and constraints

Today's GAS is a Thermo Sudoku! Normal Sudoku rules apply. Additionally, numbers on a thermometer must strictly increase, starting from the bulb.



f-puzzles - <https://f-puzzles.com/?id=yxsfcb6u>

CtC - <https://tinyurl.com/2p8swf26>

Penpa - <https://git.io/J9c6L>

January 11, 2022: Ego

Philip Newman

It's good to be back, at the crack of dawn, posting a new puzzle in #daily-sudoku for all you early birds 🐦. As all of you know, I can hardly stay in bed when it's time for a Philip puzzle. You know The Princess and the Pea? It's like that, but no mere physical object is under my mattress, just the thought of getting today's GAS up as fast as possible for all you lovely people. I even write these intros in advance in order to reduce the amount of time you have to wait. Aren't I so thoughtful?

Today's puzzle is an Even Sudoku!

Normal sudoku rules apply. Digits in grey squares must be even.

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

Play on f-puzzles: <https://f-puzzles.com/?id=y42vx5p3>

Play on CTC App: <https://tinyurl.com/2davrb6d>

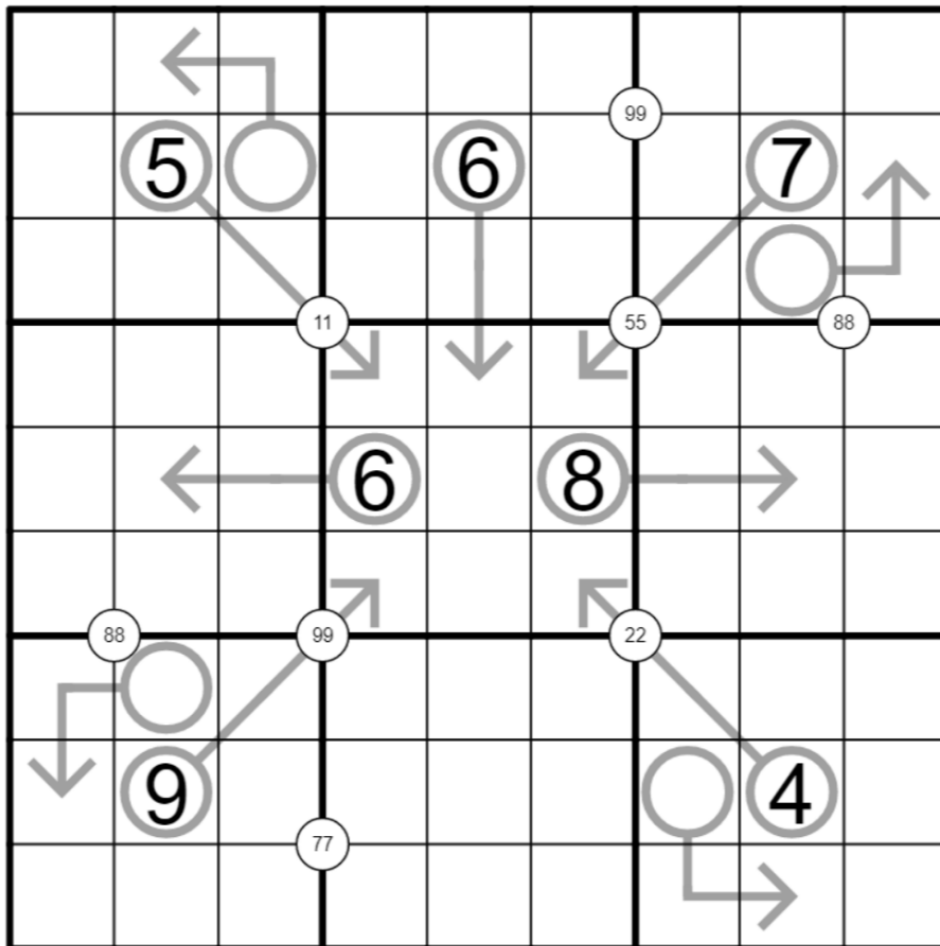
## January 12, 2022: Arrow Quads

Clover

Good morning, friends, and don't touch that dial, because what I have to show you today JUST MIGHT CHANGE YOUR LIFE. It's the organic, GMO-free, holistic, heliotropic, amphibious, all-singing, all-dancing ARROW QUADS. From the same people who brought you the Bowflex **TM**, Shake-weights **TM**, and Fyre Festival **TM**, get ready to solve your way to a newer, younger, fitter you in just six short weeks with ARROW QUADS. Feeling tired and lifeless? ARROW QUADS. Feeling limp and flabby? ARROW QUADS. This year, get the arrow quads YOU know you deserve, in just five easy payments of 81 digits plus tax. We'll even throw in a set of THERMO BICEPS, absolutely free! Don't miss this golden opportunity; only the first 500 callers will qualify! ARROW QUADS: because you're worth it!

Normal sudoku rules apply! Also, digits along an arrow must sum to the value in the attached circle! (Digits may repeat along an arrow as long as they follow all other rules!)

Digits in a white circle must appear somewhere in the four cells surrounding that circle! Note that if a digit appears twice in a white circle, it must appear at least twice in the four surrounding cells!



f-puzzles: <https://f-puzzles.com/?id=y3ufhjzw>

CtC: <https://tinyurl.com/4sd2rth5>



## Bonus 1: Clone Sudoku

Jovi

Normal Sudoku rules apply. The shaded regions are clones, meaning they contain the same digits in exactly the same positions (no rotation or reflection allowed).

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

f-puzzles: <https://f-puzzles.com/?id=y9krq2jv>

CtC: <https://tinyurl.com/yckp8dsv>

## Bonus 2: Antiking/Zone Sudoku

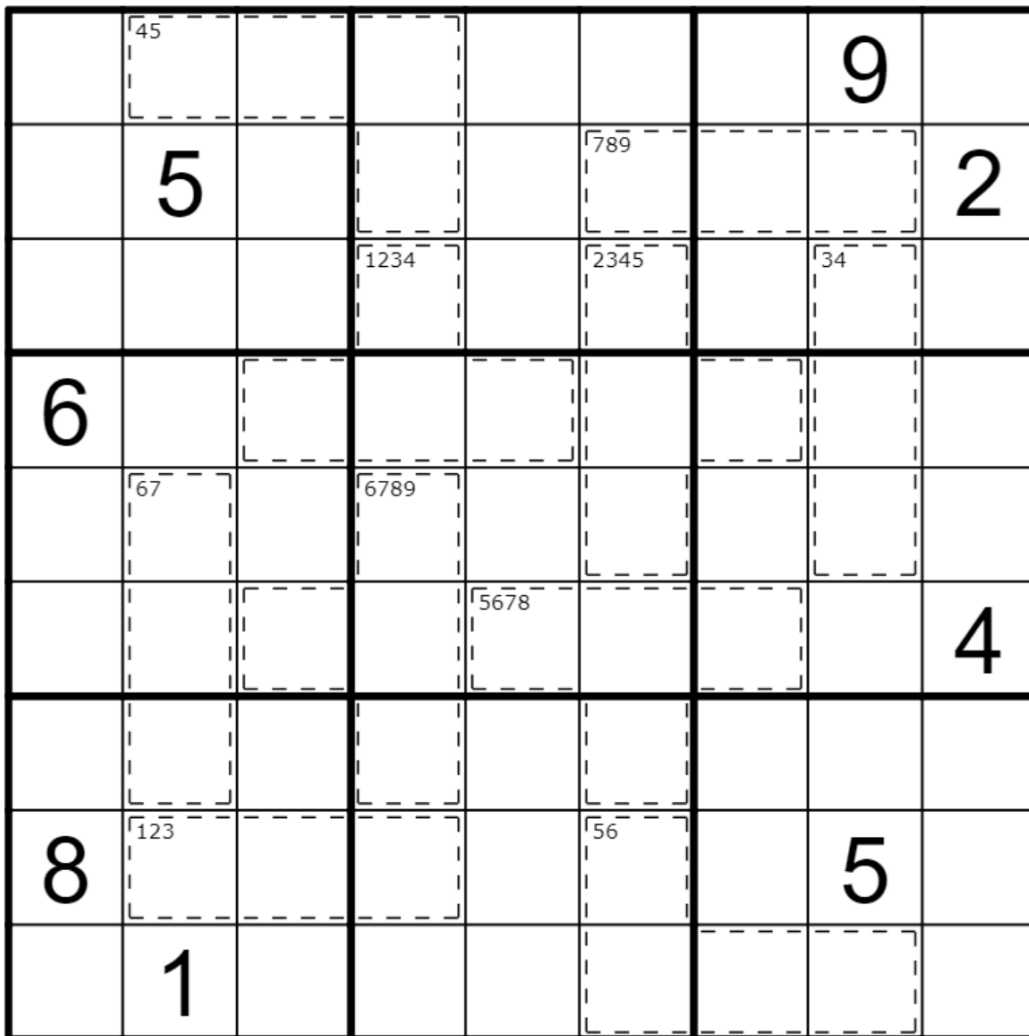
Tyrgannus

Normal sudoku rules apply.

Antiking/no touch: two instances of the same digit must never touch each other diagonally.

Zone: Each cage in the grid has a set of digits indicated in its top left corner. All of the digits in that set must appear somewhere within that cage. Digits can repeat within a cage, regardless of whether they appear in the indicated set.

Note for new solvers: if you aren't sure how to resolve the ending of this sudoku, double check that you've used the antiking constraint!



f-puzzles: <https://f-puzzles.com/?id=y7xomacr>

CtC: <https://tinyurl.com/3k4dam4b>

**Bonus 3:**

Eric Fox

Normal Sudoku rules apply.

Pairs of digits placed in cages form two-digit numbers, read from left to right. The order of these numbers (from least to greatest) is given in the upper left corner of the cages. (For example, the cage marked with a "3" contains the third-lowest number.)

8			1					
			<sup>6</sup>		<sup>4</sup>		8	
	<sup>8</sup>						<sup>2</sup>	
<sup>10</sup>		5	7		<sup>13</sup>			
	<sup>12</sup>			4		<sup>11</sup>		
		<sup>14</sup>			8	9	<sup>9</sup>	
<sup>1</sup>						<sup>7</sup>		
	5	<sup>3</sup>		<sup>5</sup>				
					7			3

f-puzzles: <https://f-puzzles.com/?id=yc8gbs3o>

CtC: <https://tinyurl.com/2p988h4j>

### Bonus 4: Two Classics

Shye

Normal sudoku rules apply.

<https://f-puzzles.com/?id=yc6jggcb>

<https://tinyurl.com/ypkuchdz>

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

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

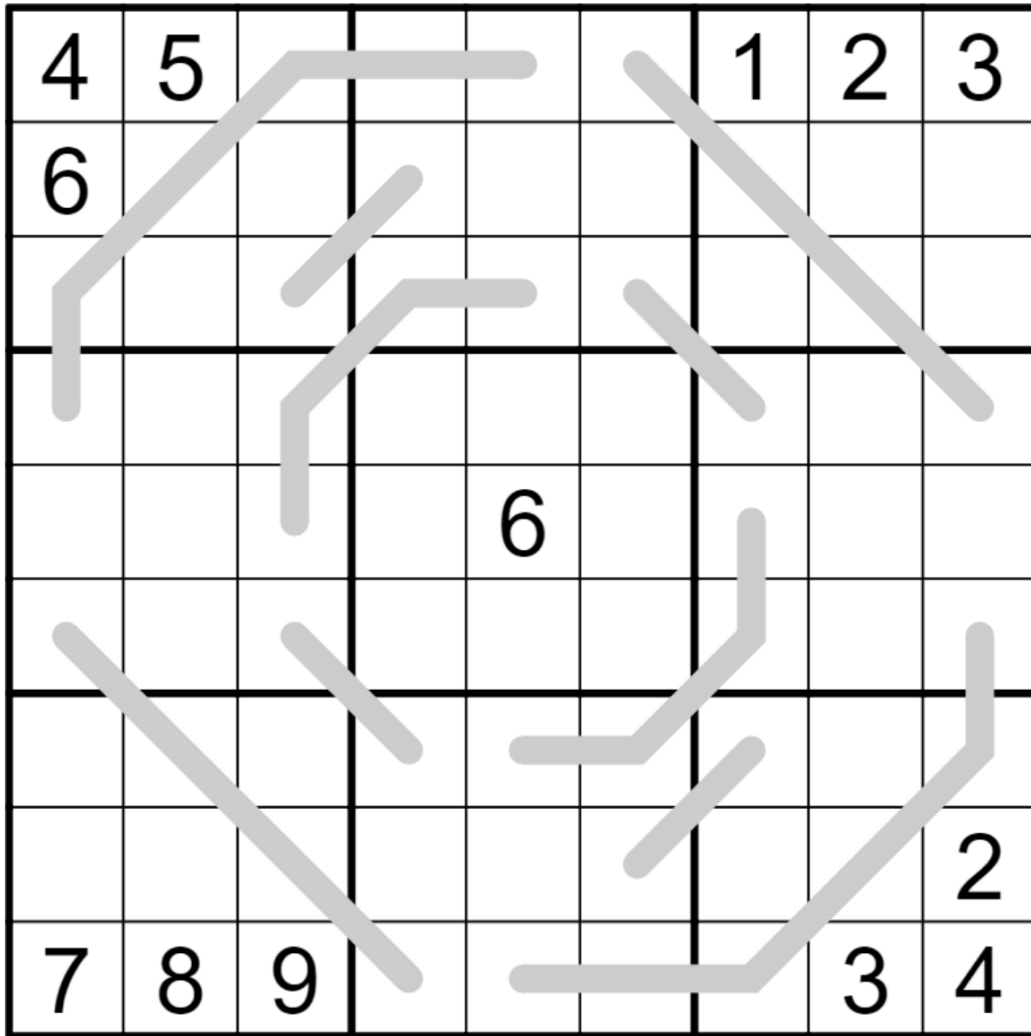
<https://f-puzzles.com/?id=y8tjg39z>

<https://tinyurl.com/2p9ya6av>

### Bonus 5: Doubling Lines

Sam Cappleman-Lynes

Normal Sudoku rules apply. If a digit appears on a grey line, then it appears exactly twice on that line.



f-puzzles: <https://f-puzzles.com/?id=yclblxy4>

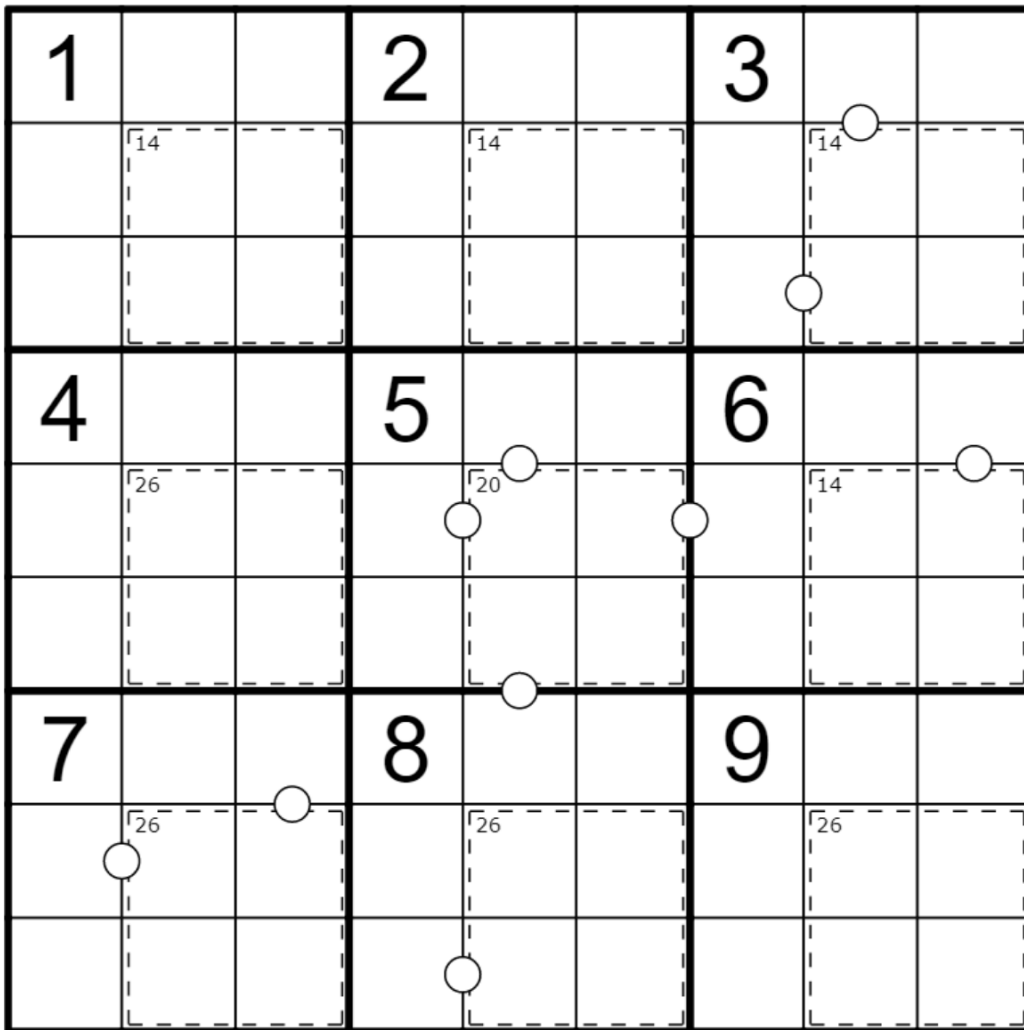
CtC: <https://tinyurl.com/3ecvy8wr>

Penpa: <https://git.io/JyX2G>

### Bonus 6: Advent of Boxing Day?

Philip Newman

Normal sudoku rules apply. Digits in cages cannot repeat and must sum to the total given. Digits in cells separated by a white dot must be consecutive. (No negative constraint - adjacent digits not separated by a white dot may still be consecutive.)



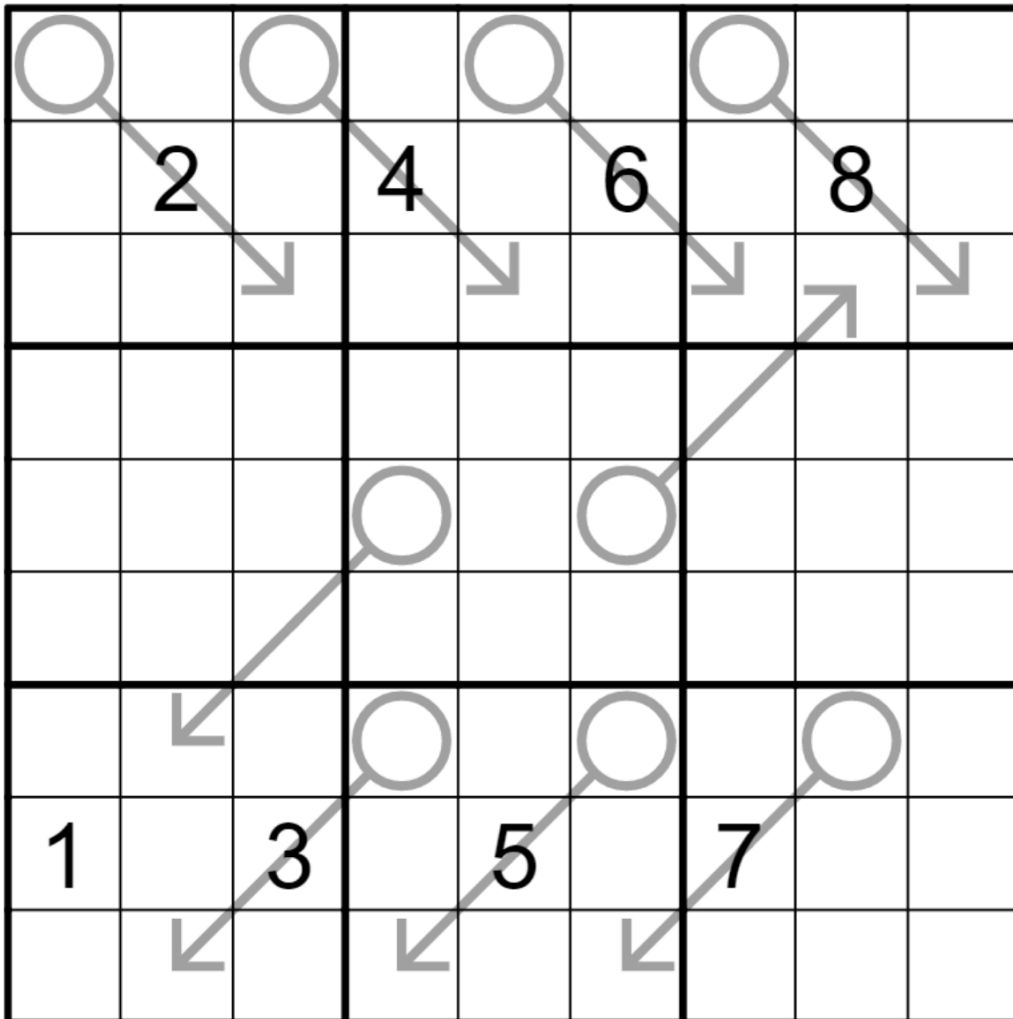
f-puzzles: <https://f-puzzles.com/?id=ybf9bczq>

CtC: <https://tinyurl.com/57af935k>

### Bonus 7: Arrow Sudoku

Clover

Normal sudoku rules apply. Digits along an arrow must sum to the value in the attached circle. Digits may repeat along an arrow as long as they follow sudoku rules.



f-puzzles: <https://f-puzzles.com/?id=yatyrj4c>

CtC: <https://tinyurl.com/yc7wd8mu>

# Time Benchmarks

	One party hat	Two party hats	Today's dinosaur:
24 Dec 2021	11:00	6:00	satiated saurophaganax
25 Dec 2021	15:00	9:00	festive fukuiraptor
26 Dec 2021	15:00	8:00	hot hot hot huabeisaurus
27 Dec 2021	13:00	7:30	secure sauropelta
28 Dec 2021	11:00	6:00	overstuffed oviraptor
29 Dec 2021	10:00	5:00	year-end yimenosaurus
30 Dec 2021	13:00	7:30	nautical neuquenosaurus
31 Dec 2021	11:00	6:30	celebratory cedarpelta
1 Jan 2022	12:22	7:20	auld abydosaurus
2 Jan 2022	11:11	5:55	confusing conchoraptor
3 Jan 2022	11:30	6:30	queztalcoaltus northropi
4 Jan 2022	12:00	7:00	pointing planicoxa
5 Jan 2022	15:00	8:00	decimal dromiceiomimus
6 Jan 2022	13:00	6:45	foraging fostoria
7 Jan 2022	12:00	6:30	OG legendary holo-foil first edition dinosaur of persistence
8 Jan 2022	12:00	6:45	samurai stegosaurus
9 Jan 2022	10:30	6:00	merrymaking minmi
10 Jan 2022	12:00	7:00	overwhelmed ornitholestes
11 Jan 2022	10:00	6:00	early-bird europasaurus
12 Jan 2022	11:00	6:00	cutting-edge corythosaurus
13 Jan 2022	13:00	7:00	murderous magyarosaurus