

16th

WORLD SUDOKU CHAMPIONSHIP

INSTRUCTION BOOKLET



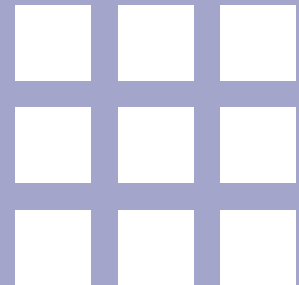
30th

16th

PUZZLE

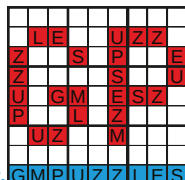
SUDOKU

WORLD CHAMPIONSHIPS



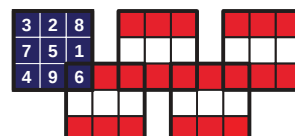
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TEAM USA



SCHEDULE FOR THE 16TH WORLD SUDOKU CHAMPIONSHIP

October 16



09:00 - 09:45 Individual Round 1: Opening Ceremony (450 points)



09:50 - 10:20 Individual Round 2: Simply Classic (450 points)*



10:35 - 11:20 Individual Round 3: Intellectual Properties (600 points)



11:25 - 12:10 Individual Round 4: It All Adds Up (600 points)



14:00 - 14:45 Individual Round 5: Extra Toppings (550 points)



14:50 - 15:30 Individual Round 6: Cloned Classics (450 points)



15:45 - 16:15** Team Round 11: Too Many Clones (1200 points)



16:30 - 17:00** Team Round 12: Put It All Together (1200 points)

October 17



09:00 - 09:40 Individual Round 7: Classics, Revisited (550 points)



09:45 - 10:30 Individual Round 8: Think Outside the Box (550 points)



10:40 - 11:25 Individual Round 9: Grid-breaking (550 points)



11:30 - 12:15 Individual Round 10: Sudoku Sandbox (575 points)



14:00 - 14:45** Team Round 13: Leafs and Stars Assemble (1700 points)



14:55 - 15:40** Team Round 14: Stick to Your Vision (1200 points)



15:50 - 16:35** Team Round 15: Instructionless Sandbox (1600 points)



17:30 - 18:30 Individual Playoff

* 15 points per minute bonus for round 2, all other individual rounds at 10 points per minute

** approximate times; team rounds will be allowed to run until at least 2 teams are finished.

COMPETITION RULES

Competition Rules

(These rules have been mostly taken from prior World Sudoku Championships with only minor adaptations.)

Individual Competition 16th

The individual competition is based on 10 rounds, starting with an Opening Ceremony of nine sudoku puzzles that represent each of the nine main individual rounds, Rounds 2 to 10. Two rounds feature classic sudoku, another round features “cloned” classics, and the remaining six rounds feature common modes of varying sudoku such as properties of individual cells (round 3), arithmetic constraints (round 4), extra region-like constraints (round 5), exterior clues (round 8), grid variations (round 9), and hybrids (round 10).

The top four competitors from the main competition will compete in a 10-puzzle playoff for the title of World Sudoku Champion.

In the case of a tie, rankings will be broken based on considering scores in round 1, then 7, 2, 3, 4, 5, 6, 8, 9, 10 with a tie broken by the first round with a different result. If needed, a special tie-breaking puzzle will be used.

The final playoff is estimated to take about 50 minutes and will run until three players finish. The top competitor will get the full 50 minutes; the other competitors will get proportionately less time based on their total individual round score.

During the playoff, the puzzles are solved and judged in order. When a competitor solves a puzzle, he or she will submit the puzzle to their grader and can immediately start working on the next puzzle. The grader will check the puzzle for correctness. If there is any mistake in the solution, the grader will return the puzzle and enforce a 30-second penalty, where the competitor is not allowed to look at any puzzle or do any writing. After the penalty period, the competitor may continue working on another puzzle, or immediately correct the mistake. However, the contestant must still submit puzzles to the grader in the correct order. For each subsequent mistake on the same puzzle, the time penalty goes up by 30 seconds.

Team Competition

In addition to the individual competition, teams of four will be challenged by a total of five team rounds. These rounds come in multiple styles that will require strong teamwork and sudoku solving skills to do well.

Extra time is being held for the team rounds to ensure multiple teams finish each of the rounds. If no two teams have finished with perfect marks before 5 minutes are left on the clock, then the clock will be paused at 5 minutes until (1) two teams finish and are judged correct, or (2) a total of fifteen extra minutes have passed. This extra time has been successful in past World Sudoku Championships (notably WSC5 in Philly) where team round timing can be challenging for organizers to manage perfectly.

The total sum of scores from the team rounds as well as the four individual members of the team will be used to determine the top three teams at the 16th World Sudoku Championship.

COMPETITION RULES

Marking and Bonus

Points will be awarded only for correctly solved puzzles unless otherwise indicated (the few exceptions are in Individual Round 6 and multi-puzzle team rounds including Team Round 14 where small errors may earn partial credit).

In Individual rounds, if a player finishes all puzzles correctly then a bonus of 10 points per minute will be awarded for each full minute saved, with the exception of Round 2 where 15 points per minute will be awarded.

In team rounds, a bonus of 40 points per minute will be awarded to teams for each full minute saved.

If a single “minor” error (as determined by the judges) is present in a round submitted for bonus, 60% of time bonus may still be awarded to the competitor or team.

Competition Hall Rules

1. All competitors have to sit at their pre-allocated desk in individual rounds. Teams have to work at their pre-allocated desk area for team rounds.
2. Prior to the start of each round, competitors must ensure they are at their desks ready for the start of the round. Late arrivals may not be permitted to enter the competition hall to take part in a round (at the discretion of the organizers).
3. Prior to the start of each round, competitors should clearly write their name and team on the front page of their competition booklet in the allocated space. If this information is not complete, then the organizers reserve the right not to award any points to that competitor for that round.
4. Competitors must not open their booklets before the official start of the round. Only when the signal for the start of the round has been given, competitors may open their booklets and begin solving the puzzles.
5. During each individual round, competitors have to keep silent, unless declaring completion of a round.
6. During team rounds (except for team round 14 and first part of team round 15), team members may talk to each other, but should do this with respect to other teams.
7. Puzzles can be completed in any order within a round. The point value of a puzzle is an indication of its expected difficulty, although individual solving experience may differ. The difficulty of an example puzzle does not necessarily reflect the difficulty of the corresponding competition puzzle.
8. The official puzzle booklets will not contain puzzle examples. Competitors are allowed (and encouraged) to bring the Instruction Booklet to their desk as it contains examples for almost every puzzle which will be part of the championship.
9. When a competitor believes that there is a problem with a puzzle, they must clearly state that puzzle is wrong by writing “Wrong puzzle” next to it. The competitor must not notify the organizers during the round. This will be investigated upon completion of the round.
10. To declare a round complete, a competitor must close their booklet, clearly state “finished” and raise their arm with the booklet. The competitor’s arm must be raised until the booklet is collected. The same rules apply for the team competition.
11. Competitors or teams who complete a round with more than five minutes in advance, are allowed to leave the competition hall quietly. However, competitors or teams who complete a round with five minutes or less left are not allowed to leave their desks or tables in order to cause no unnecessary disruption to fellow competitors.
12. If a competitor leaves the competition hall for any reason, they may not be allowed to continue in that round (at the discretion of the organizers).

COMPETITION RULES

13. When the signal is given that the round is finished, competitors have to stop solving immediately, close their booklets, put their pens or pencils down and remain seated until all booklets have been collected. The signal to get up and leave will be given by the supervisor.
14. Mobile phones and electronic devices are not permitted to use in the competition hall. The devices have to be turned off and must not be placed on the competitor's desk.
15. Only team captains and official observers equipped with a name tag are allowed to enter the competition hall while either individual or team rounds are taking place. Other non-competing participants may enter the competition hall at the discretion of the organizers.
16. Competitors may not use cameras or other recording devices during rounds. Only official observers may do so, at the discretion of the organizers. They have to respect the competitors and not use flash photography or cameras with excessive sounds.

Permitted items

1. Permitted items which can be used in the competition hall are: pens and pencils (except that **no red pens or pencils** can be used), pencil sharpeners, erasers, rulers, and instruction booklets annotated with notes regarding puzzle instructions.
2. Drinks and snacks are permitted as long as they do not disturb other competitors with a strong smell or rustling packet.
3. It is strictly forbidden to use electronic devices such as music players and headphones or any type of calculator. Use of such equipment may lead to the disqualification of the competitor.
4. Any other items brought into the hall must be kept in a bag on the floor and placed under the competitor's desk, so as not to block the aisles.

Marking and Queries

1. When a round has been evaluated, fully marked booklets are returned to a team member (i.e., captain) marked with a country tag at a given location in a given time. Country tags will be distributed to each captain prior to the start of the championships.
2. In case of any query after a booklet has been evaluated and returned to a competitor, the query must be raised through a team member with country tag to the organizers in the specified time. The schedule for the queries will be published before the competition. The booklet should be left with the organizers for investigation.
3. Puzzles may be photographed during the marking phase in order to prevent subsequent interventions.
4. Team captains are responsible for ensuring that any information given to them related to the competition is effectively shared to their team.
5. Any breach of these rules may lead to penalty points, or in severe cases to a competitor or team being disqualified from the round or competition.
6. If there is any inconsistency between this Instruction Booklet and the official puzzle booklets, such as puzzle points, the information in the printed Instruction Booklet given out to competitors in Toronto will be considered valid.
7. The decision of the WSC tournament director (Thomas Snyder) is final.

COMPETITION RULES

Credits

Authors (and often sources) for the example puzzles in the Instruction Booklet have been shared. All GMPuzzles examples are shared under a Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported license.

Besides the example puzzles in this instruction booklet, links to relevant puzzles or solution videos are given as QR codes for extra practice.

We would like to thank the many past WSC/WPC hosts for some of the rules and structure that inspired our tournament.

Puzzles for the WSC were created by the following designers in alphabetical order (authors will be listed in the solutions booklet only, not in the competition booklet):

Cihan Altay, David Altizio, Tom Collyer, Akash Douhani, Jonas Gleim, Bryce Herdt, Zoltán Horváth, Joseph Howard, Ashish Kumar, Thomas Snyder, Serkan Yürekli



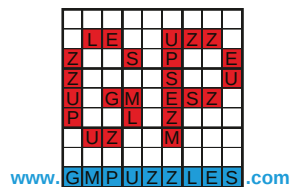
OCTOBER 16

09:00 - 09:45

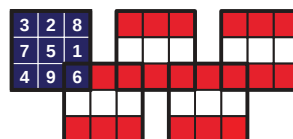
1. OPENING CEREMONY

1. Sudoku	25	
2. Thermo-Sudoku	50	
3. Killer Sudoku	70	
4. Extra Region Sudoku	70	
5. Clone Sudoku	45	
6. Sudoku	40	
7. Shape Sudoku	50	
8. Irregular Sudoku	55	
9. Thermo-Killer Shape Sudoku	45	

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ROUND 1: OPENING CEREMONY

Note

This round offers an introduction to each of the nine remaining rounds of the individual competition, with one puzzle style selected from each of Rounds 2 through 10.

1.1, 1.6 Sudoku (25, 40 Points)

Example by Thomas Snyder (GMPuzzles.com)

Insert a number from 1 to 9 into each cell so that no number repeats in any row, column, or bold region.

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

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



1.2 Thermo-Sudoku (50 Points)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Some thermometer shapes are in the grid; numbers must be strictly increasing from the round bulb to the flat end.

					5		4
						6	
			2				
		1					
	9					3	
7		8					

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



ROUND 1: OPENING CEREMONY

1.3 Killer Sudoku (70 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, the sum of the numbers in each cage must equal the value given in the upper-left corner of that cage. Numbers cannot repeat inside a cage.

	12			16		11		
	6	1	2		3	4		
				17			3	
	14	15			14			
							15	
	21	5	6		7	8		
			8		13			

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



1.4 Extra Region Sudoku (70 Points)

Example by Takeya Saikachi (GMPuzzles.com)

Standard Sudoku rules. Also, there are shaded regions; each shaded region must contain each number from 1 to 9 exactly once.

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

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

ROUND 1: OPENING CEREMONY

1.5 Clone Sudoku (45 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, all shaded regions of the same shape ("clones") must include the same numbers in the same positions. Numbers may repeat within a clone.

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

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

1.7 Shape Sudoku (50 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, there are some numbered shapes that must be put into the grid. Shapes can be rotated, but cannot be reflected. Each shape outside the grid must appear exactly once inside the grid. (While the example uses 45 degree rotation, the competition puzzles will be clearer with just 90 degree rotations allowed.)

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

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



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

ROUND 1: OPENING CEREMONY

1.8 Irregular Sudoku (55 Points)

Example from 5th World Sudoku Championship

Standard Sudoku rules, except the regions are not uniform 3×3 boxes and instead have irregular shapes.

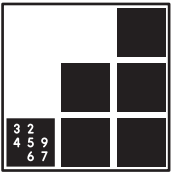
		5				8		
1		2				4		3
			5		7			
				9				
			1		3			
7		8				1		6
		3				9		

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

1.9 Thermo-Killer Shape Sudoku (45 Points)

Combination of Thermo-Sudoku (see 1.2), Killer Sudoku (see 1.3), and Shape Sudoku (see 1.7) rules.





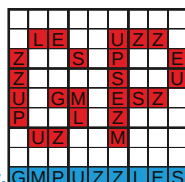
OCTOBER 16

09:50 - 10:20

2. SIMPLY CLASSIC

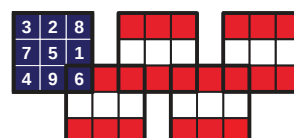
1. Sudoku	25	
2. Sudoku	35	
3. Sudoku	35	
4. Sudoku	45	
5. Sudoku	45	
6. Sudoku	60	
7. Sudoku	60	
8. Sudoku	70	
9. Sudoku	75	

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ROUND 2: SIMPLY CLASSIC

Notes

- This round features puzzles easier in difficulty, in contrast to the classic sudoku in Round 7.
- The value of puzzles in this Simply Classic round has been increased by 50% to equal the value of the other rounds.

2.1-2.9 Sudoku (25, 35, 35, 45, 45, 60, 60, 70, 75 Points)

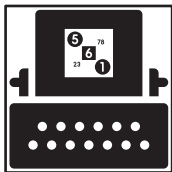
Example by Thomas Snyder (GMPuzzles.com)

Insert a number from 1 to 9 into each cell so that no number repeats in any row, column, or bold region.

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

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





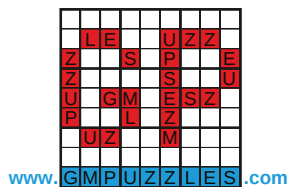
OCTOBER 16

10:35 - 11:20

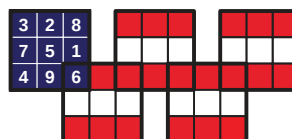
3. INTELLECTUAL PROPERTIES

1. Palindrome Sudoku	30	
2. Anti-Knight Sudoku	50	
3. Thermo-Sudoku	55	
4. Thermo-Sudoku	95	
5. Distance Sudoku	65	
6. Even/Odd Sudoku	65	
7. Self-Joint Sudoku	70	
8. Pencil Marks Sudoku	80	
9. Consecutive Pairs Sudoku	90	

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ROUND 3: INTELLECTUAL PROPERTIES

3.1 Palindrome Sudoku (30 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, there are gray lines; each gray line must be a palindrome, reading the same backwards and forwards.

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

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

3.2 Anti-Knight Sudoku (50 Points)

Example by Ashish Kumar (GMPuzzles.com)

Standard Sudoku rules. Also, numbers cannot repeat in any cells separated by a chess knight's move.

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

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



ROUND 3: INTELLECTUAL PROPERTIES

3.3, 3.4 Thermo-Sudoku (55, 95 Points)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Some thermometer shapes are in the grid; numbers must be strictly increasing from the round bulb to the flat end.

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

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



3.5 Distance Sudoku (65 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, the difference between any two adjacent numbers along the gray lines must be at least four.

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

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

ROUND 3: INTELLECTUAL PROPERTIES

3.6 Even/Odd Sudoku (65 Points)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Also, cells with a square contain an even number; cells with a circle contain an odd number.

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

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



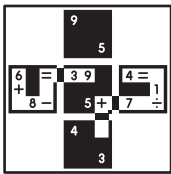
3.7 Self-Joint Sudoku (70 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, all 3×3 regions are numbered from 1 to 9 from the first cell to the last cell; if a number has the same numerical value as its position in any region, the cell is marked with gray, otherwise, it's white. All gray cells are given.

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

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



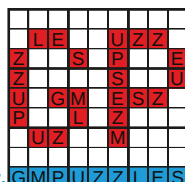
OCTOBER 16

11:25 - 12:10

4. IT ALL ADDS UP

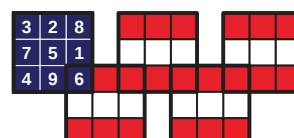
1. Arrow Sudoku	45	
2. Arrow Sudoku	65	
3. Math Grid Sudoku	55	
4. Killer Sudoku	65	
5. Killer Sudoku	75	
6. Bubble Sudoku	65	
7. Difference Sudoku	75	
8. Mathrax Sudoku	75	
9. Group Sum Sudoku	80	

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ROUND 4: IT ALL ADDS UP

4.1, 4.2 Arrow Sudoku (45, 65 Points)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Some arrow shapes are in the grid; the sum of the numbers along the path of each arrow must equal the number in the circled cell. Numbers can repeat within an arrow shape.

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

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



4.3 Math Grid Sudoku (55 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, some 3×3 regions are colored gray, and in each row and column of each gray region, an equation is defined across or down. The result of this equation must be read in the first one to three cells immediately after the equals sign. Mathematical operator precedence does not apply, and operations should be applied in order from left to right and from top to bottom.

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

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

ROUND 4: IT ALL ADDS UP

4.4, 4.5 Killer Sudoku (65, 75 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, the sum of the numbers in each cage must equal the value given in the upper-left corner of that cage. Numbers cannot repeat inside a cage.

	12			16		11		
	6	1	2		3	4		
				17			3	
	14	15			14			
							15	
	21	5	6		7	8		
			8		13			

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



4.6 Bubble Sudoku (65 Points)

Example by Zoltán Horváth

Standard Sudoku rules. Also, each gray region contains an equation reading across or down. Normal operator precedence applies (multiplication before addition).

	7	$\times = \times \div$	5	
3	6	8	1	7
9		$= +$	3	
$-$				$+$
$\times$	4		2	$\times$
$=$				$=$
$-$	3	$- =$		$\times$
1	2	5	7	9
	5	$+ + = \times$	2	

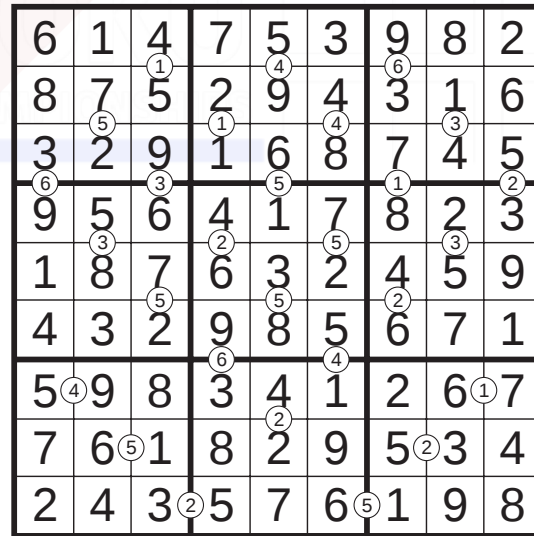
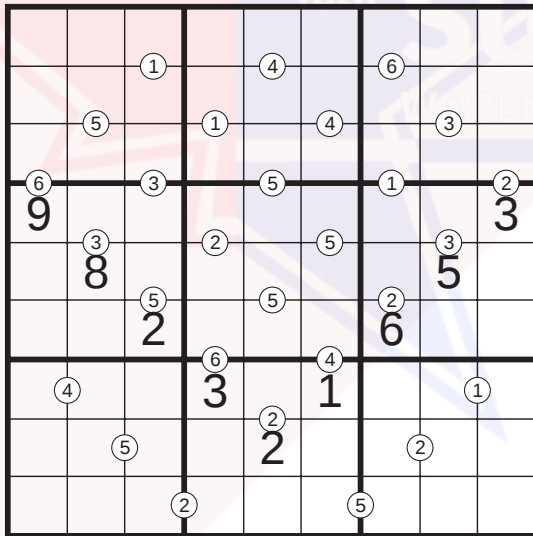
4	7	$1 \times 2 = 6 \times 3 \div 9$	5	8
3	2	9	8	5
8	9	5	4	$7 = 1 + 6$
2	1	8	7	4
5	4	3	1	2
7	6	9	5	3
9	3	7	$- 6 = 1$	2
1	8	2	3	5
6	5	$4 + 8 + 9 = 7 \times 3$	2	1

ROUND 4: IT ALL ADDS UP

4.7 Difference Sudoku (75 Points)

Example by Ashish Kumar (GMPuzzles.com)

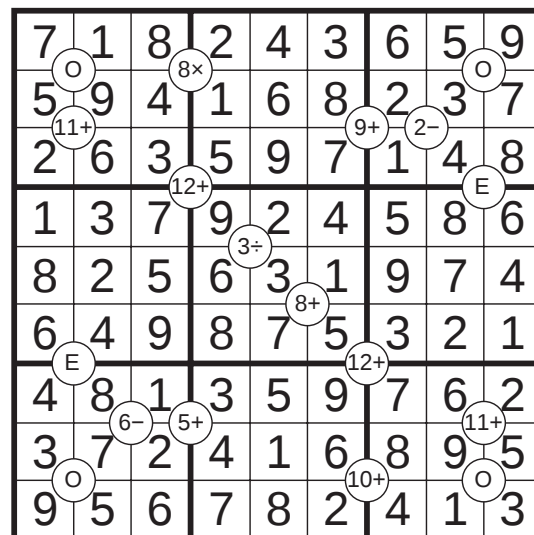
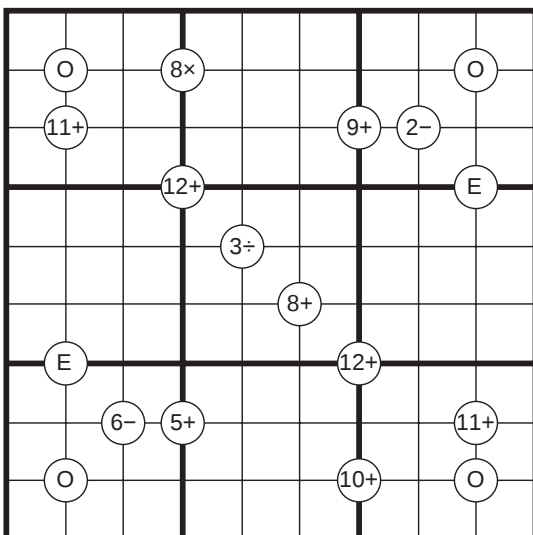
Standard Sudoku rules. Also, each number between two adjacent cells indicates the difference of the numbers in those two cells.



4.8 Mathrax Sudoku (75 Points)

Example by Ashish Kumar (GMPuzzles.com)

Standard Sudoku rules. Also, some of the intersections of four cells are marked by a circle. If a circle contains a number and an operator, the number must be the result of the operation applied to both pairs of diagonally opposite cells. If a circle contains an "E" that indicates all four cells around the circle must be even. If a circle contains an "O" that indicates all four cells around the circle must be odd.

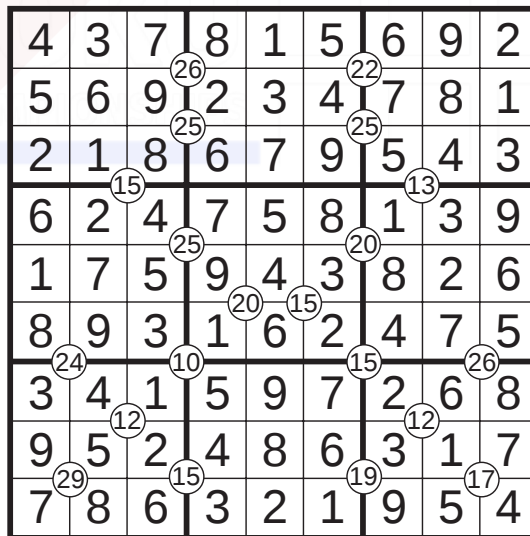
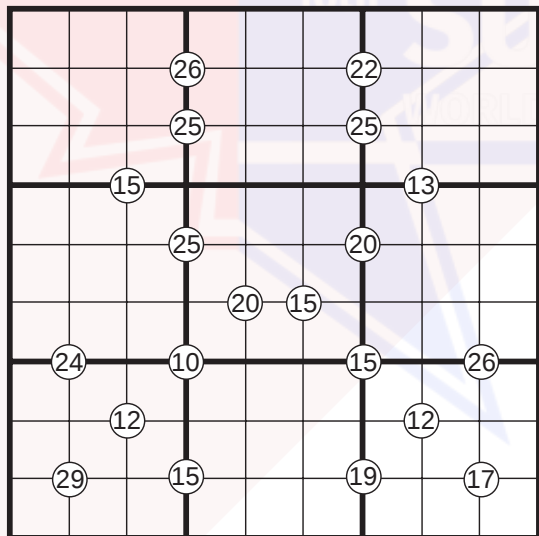


ROUND 4: IT ALL ADDS UP

4.9 Group Sum Sudoku (80 Points)

Example by Ashish Kumar (GMPuzzles.com)

Standard Sudoku rules. Also, the number given inside each circle represents the sum of the numbers in the cells touched by that circle. (Numbers can repeat around a circle if in different regions.)





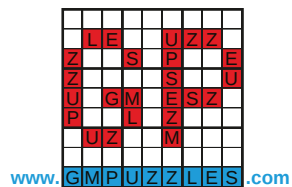
OCTOBER 16

14:00 - 14:45

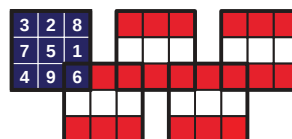
5. EXTRA TOPPINGS

1. Disjoint Sudoku	50	
2. Diagonal Sudoku	60	
3. Double Diagonal Sudoku	45	
4. Triple Diagonal Sudoku	80	
5. Renban Sudoku	55	
6. Renban Sudoku	55	
7. Windoku	65	
8. Extra Region Sudoku	60	
9. Extra Region Sudoku	80	

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ROUND 5: EXTRA TOPPINGS

5.1 Disjoint Sudoku (50 Points)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Additionally, across the entire puzzle, numbers cannot repeat in the same position of any two 3×3 boxed regions.

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

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

5.2 Diagonal Sudoku (60 Points)

Example from 5th World Sudoku Championship

5.3 Double Diagonal Sudoku (45 Points)

5.4 Triple Diagonal Sudoku (80 Points)

Standard Sudoku rules. Also, numbers cannot repeat on the marked diagonals. (Diagonal Sudoku, as in the pictured example, uses just the two main diagonals; the Double/Triple Diagonal Sudoku have additional marked diagonals with fewer than nine cells but numbers cannot repeat on any marked diagonal.)

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

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

ROUND 5: EXTRA TOPPINGS

5.5, 5.6 Renban Sudoku (55, 55 Points)

Example by Ashish Kumar (GMPuzzles.com)

Standard Sudoku rules. Also, some shaded regions are given; each shaded region must contain a non-repeating set of consecutive numbers, in any order.

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

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

5.7 Windoku (65 Points)

Example from 5th World Sudoku Championship

Standard Sudoku rules. Also, each of the four 3×3 shaded regions must contain the numbers 1 to 9.

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

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

ROUND 5: EXTRA TOPPINGS

5.8, 5.9 Extra Region Sudoku (60, 80 Points)

Example by Takeya Saikachi (GMPuzzles.com)

Standard Sudoku rules. Also, there are shaded regions; each shaded region must contain each number from 1 to 9 exactly once.

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

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

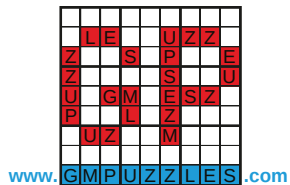


OCTOBER 16
14:50 - 15:30

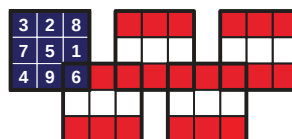
6. CLONED CLASSICS

1ab. Twin Clones Sudoku	80		
2ab. Twin Clones Sudoku	100		
3ab. Twin Clones Sudoku	120		
4abc. Triple Trouble Sudoku	150		

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ROUND 6: CLONED CLASSICS

6.1ab, 6.2ab, 6.3ab Twin Clones Sudoku (80, 100, 120 Points) Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Additionally, the numbers in each shaded region in the first grid must correspond exactly (i.e., be like clones as in 1.5) to another shaded region in the second grid. The correspondence of which regions match to which other regions must be determined when solving the puzzle. Regions cannot be rotated or reflected.

Note: Partial points will be given for correctly solved individual grids that are part of the overall solution. 70% will be given for 1 of 2 correct grids.

6.4abc Triple Trouble Sudoku (150 Points)

Standard Sudoku rules. Additionally, the numbers in each shaded region in a grid must match with exactly one other shaded region in another grid. The correspondence of regions between grids must be determined when solving the puzzle (e.g., first grid has regions A+B, second grid has B+C, third grid has A+C). Regions cannot be rotated or reflected.

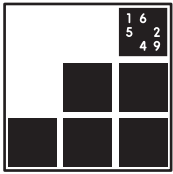
Note: Partial points will be given for correctly solved individual grids that are part of the overall solution. 30% of points will be given for 1 of 3 correct grids. 70% for 2 of 3 correct grids.

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

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

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

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

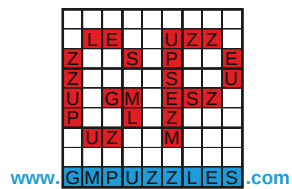


OCTOBER 17
09:00 - 09:40

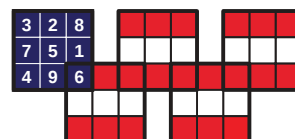
7. CLASSICS, REVISITED

1. Sudoku	40	
2. Sudoku	45	
3. Sudoku	55	
4. Sudoku	55	
5. Sudoku	55	
6. Sudoku	55	
7. Sudoku	85	
8. Sudoku	85	
9. Sudoku	75	

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ROUND 7: CLASSICS, REVISITED

Note

This round features puzzles harder in difficulty, in contrast to the classic sudoku in Round 2.

7.1-7.9 Sudoku (40, 45, 55, 55, 55, 55, 85, 85, 75 Points)

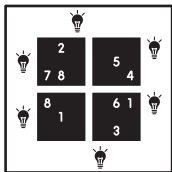
Example by Thomas Snyder (GMPuzzles.com)

Insert a number from 1 to 9 into each cell so that no number repeats in any row, column, or bold region.

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

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



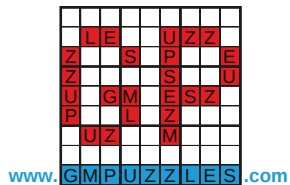


OCTOBER 17
09:45 - 10:30

8. THINK OUTSIDE THE BOX

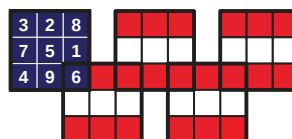
1. Outside Sudoku	30	
2. Outside Sudoku	70	
3. Diagonal Outside Sudoku	60	
4. Shape Sudoku	45	
5. Shape Sudoku	65	
6. String Sudoku	60	
7. Skyscrapers Sudoku	70	
8. Rossini Sudoku	95	
9. Even/Odd Rossini Sudoku	55	

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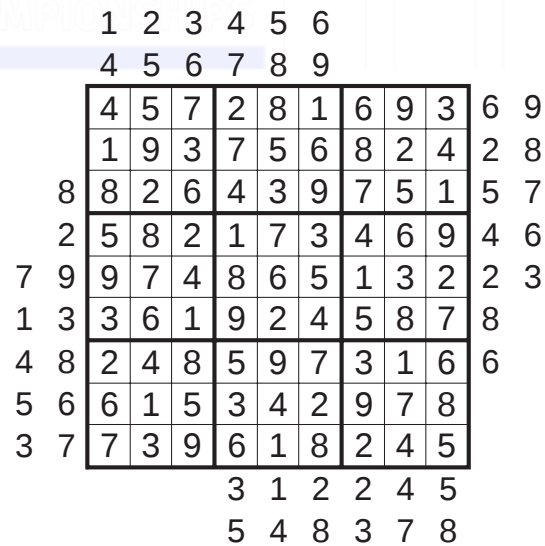
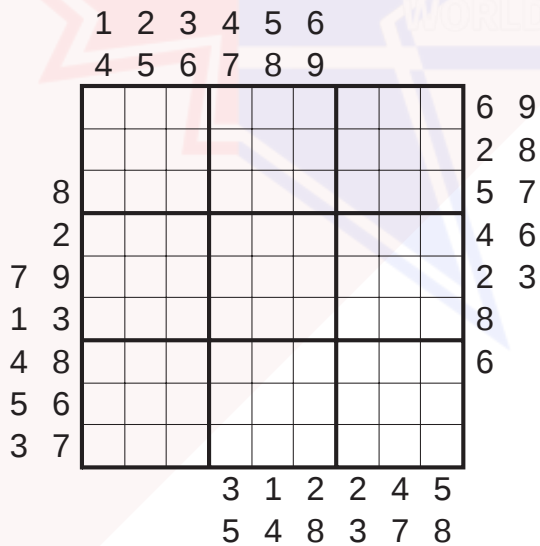


ROUND 8: THINK OUTSIDE THE BOX

8.1, 8.2 Outside Sudoku (30, 70 Points)

Example by Thomas Snyder (GMPuzzles.com)

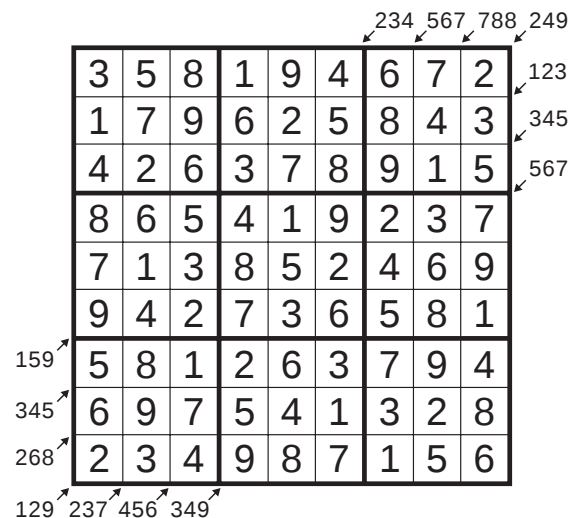
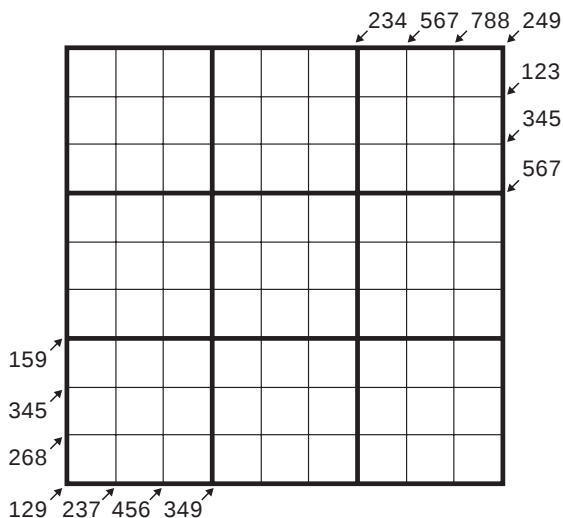
Standard Sudoku rules. Also, some numbers are given outside the grid. These numbers must appear in the first three cells in the corresponding direction.



8.3 Diagonal Outside Sudoku (60 Points)

Example by Akash Douhani

Standard Sudoku rules. Also, the numbers in the indicated diagonals are given on the outside of the grid. These numbers must appear in the first three cells in the corresponding direction.



ROUND 8: THINK OUTSIDE THE BOX

8.4, 8.5 Shape Sudoku (45, 65 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Sudoku rules. Also, there are some numbered shapes that must be put into the grid. Shapes can be rotated, but cannot be reflected.

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

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

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



8.6 String Sudoku (60 Points)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Also, some strings of numbers are given to the left and top of the grid (a loop surrounds them to help visualize the string lengths). These strings must appear in the given order in a set of adjacent cells in that row or column. ?'s can refer to any number.

ROUND 8: THINK OUTSIDE THE BOX

8.7 Skyscrapers Sudoku (70 Points)

Example from 5th World Sudoku Championship

Standard Sudoku rules. Also, each number in the grid represents the height of a building and the clues on the outside of the grid indicate how many buildings can be “seen” when looking from that direction. Taller buildings block the view of smaller buildings. (For example, if a row contains the numbers 154967832, then three buildings are seen from the left – 1, 5, and 9 – and four buildings from the right – 2, 3, 8, and 9 – with the other buildings blocked by taller buildings in front of them.)

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

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

8.8 Rossini Sudoku (95 Points)

Example by Ashish Kumar (GMPuzzles.com)

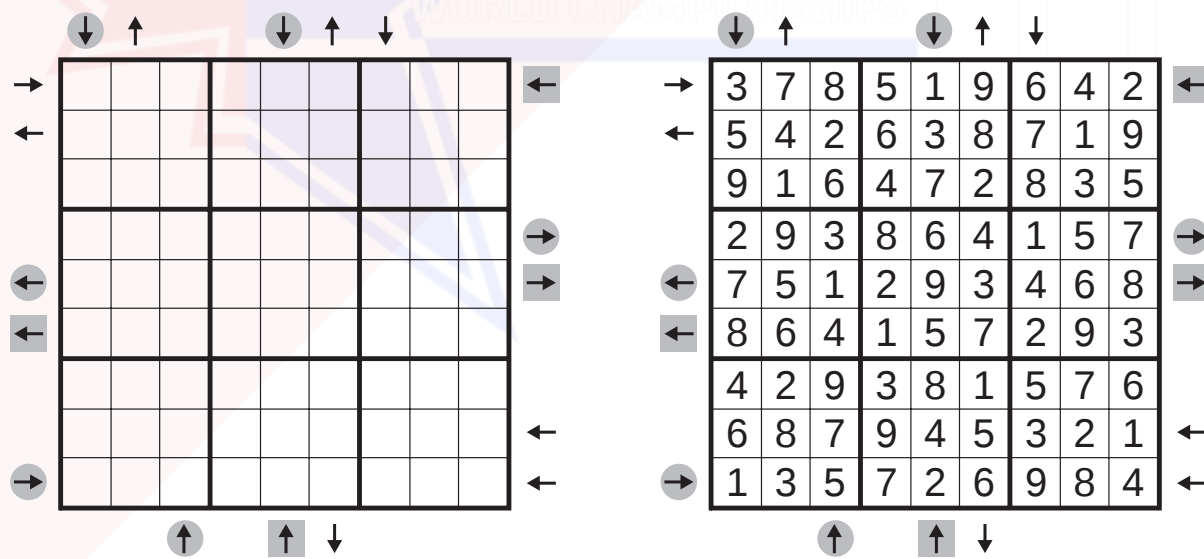
Standard Sudoku rules. Also, arrows outside the grid indicate if the first three numbers are in ascending or descending order. The arrow points towards the highest number in the series. If no arrows outside the grid are given, the first three numbers can be in neither ascending nor descending order.

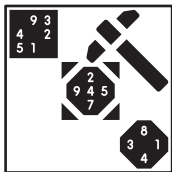
ROUND 8: THINK OUTSIDE THE BOX

8.9 Even/Odd Rossini Sudoku (55 Points)

Example by Serkan Yürekli (GMPuzzles.com)

Standard Rossini Sudoku rules (see 8.8). Also, if any arrow is marked with a square, it indicates that all the first three numbers are even; if an arrow is marked with a circle, it indicates that all the first three numbers are odd. If there is no square or circle on an arrow, the first three numbers are a mixture of even and odd. (No information is shared about the even/odd status of groups of cells that are not marked by a Rossini arrow.)





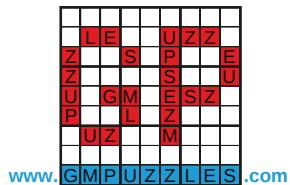
OCTOBER 17

10:40 - 11:25

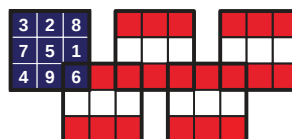
9. GRID-BREAKING

1. Primrose Sudoku	40	
2. Star Sudoku	40	
3. Sudo-Kurve	50	
4. Isudoku	60	
5. Isudoku	90	
6. Weave Sudoku	60	
7. Tile Sudoku	65	
8. Irregular Sudoku	70	
9. Ten-Box Sudoku	75	

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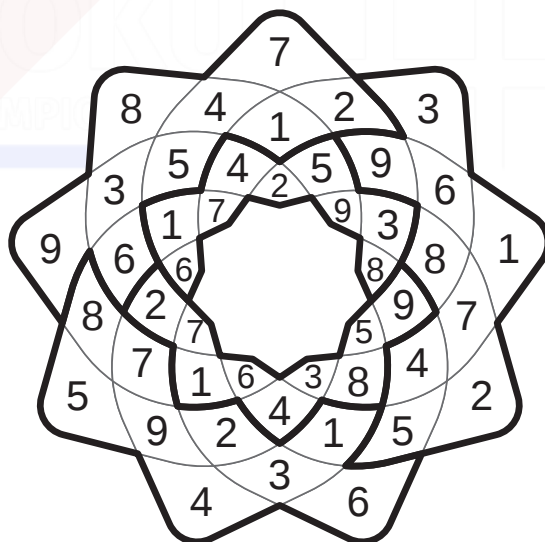
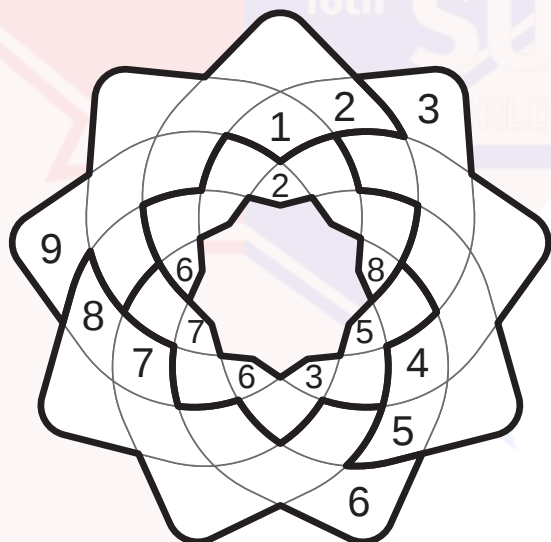


ROUND 9: GRID-BREAKING

9.1 Primrose Sudoku (40 Points)

Example by Cihan Altay

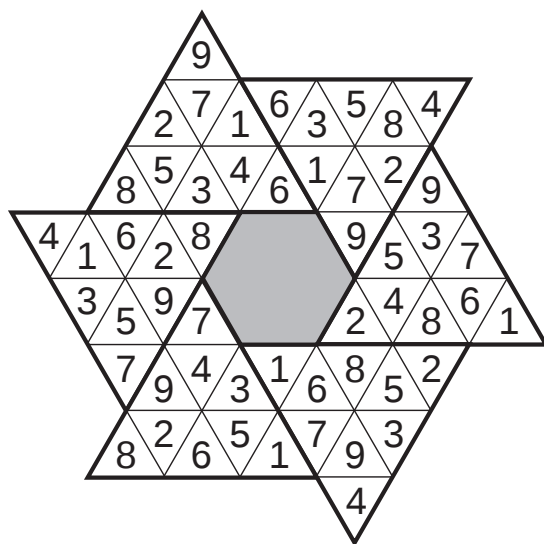
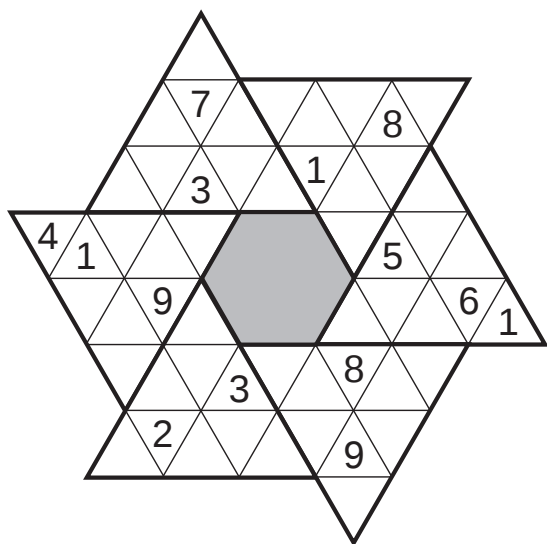
Standard Sudoku rules. The numbers 1-9 appear once along the edge of each petal, forming a wishbone shape, and in each outlined region.



9.2 Star Sudoku (40 Points)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. In this puzzle the “rows” travel in three directions. Note that some rows jump across the empty space in the middle (but have a full set of 9 cells), while some rows near the edges have only 8 cells.

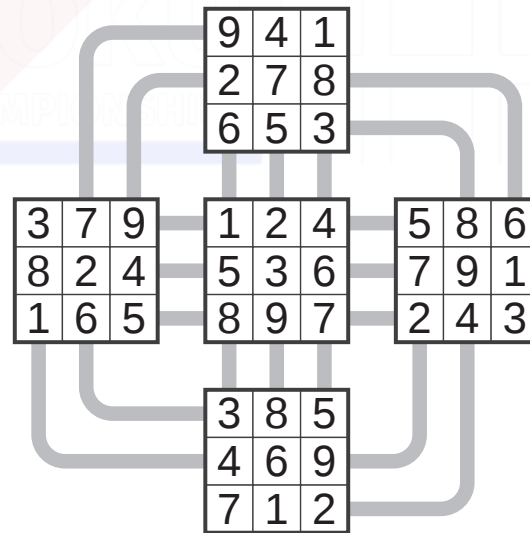
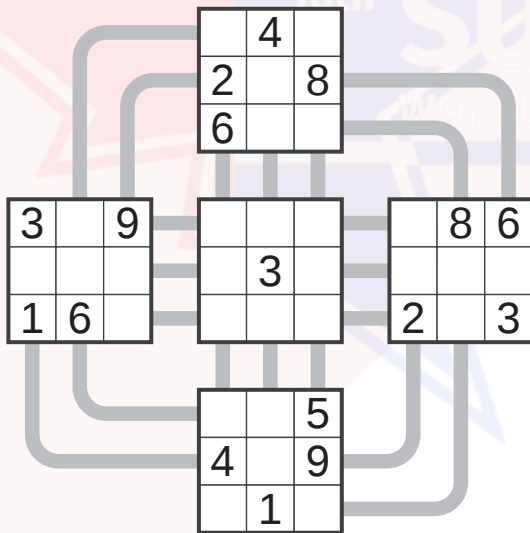


ROUND 9: GRID-BREAKING

9.3 Sudo-Kurve (50 Points)

Standard Sudoku rules. Some “rows” bend as indicated by following the curved lines.

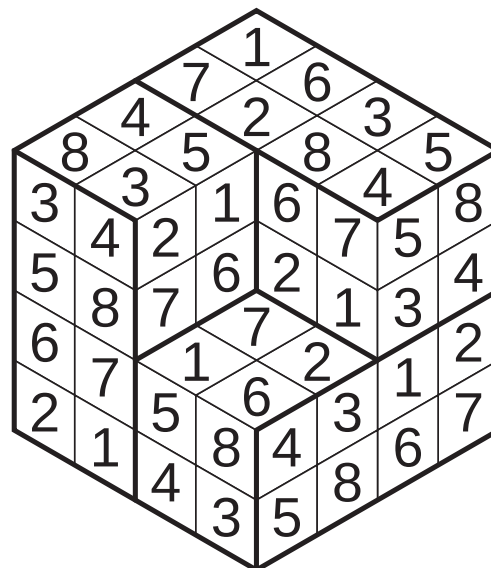
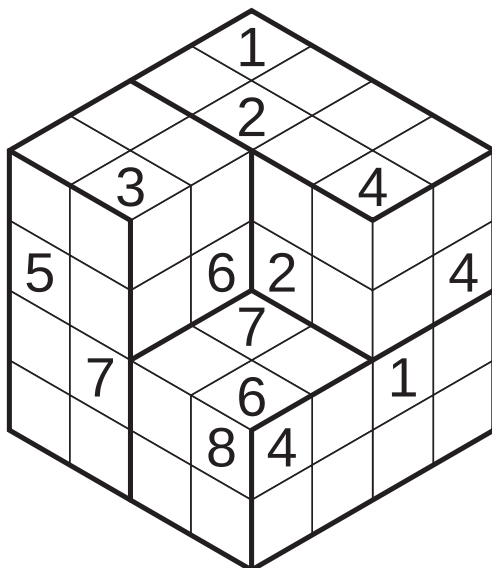
Example from 5th World Sudoku Championship



9.4, 9.5 Isudoku (60, 90 Points)

Standard Sudoku rules. Rows in Isudoku pass through opposite parallel sides of each quadrilateral; in other words, the rows bend across the surface of the apparent cube(s) to travel in a “straight” line.

Example by Thomas Snyder (GMPuzzles.com)

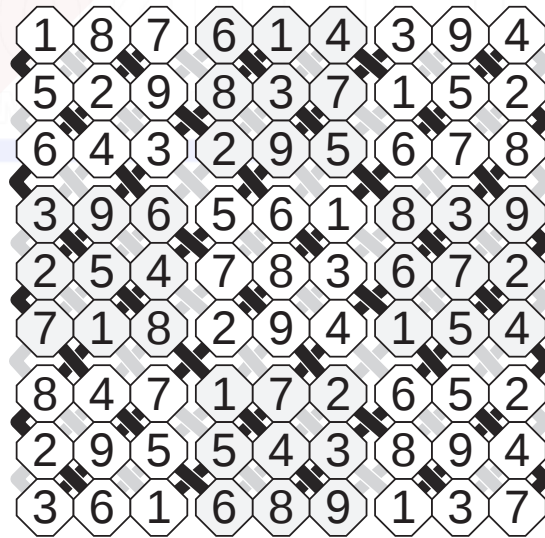
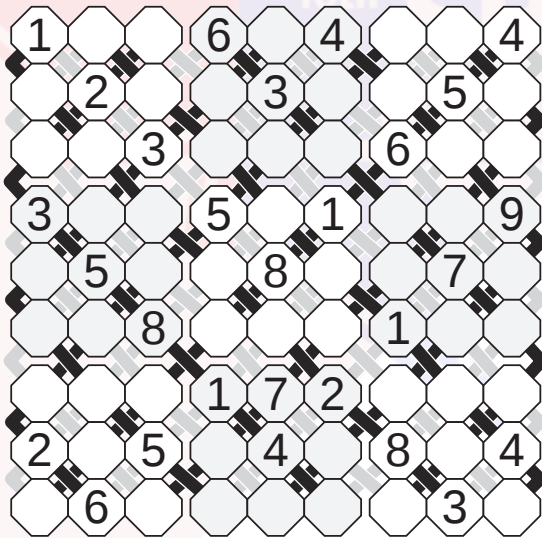


ROUND 9: GRID-BREAKING

9.6 Weave Sudoku (60 Points)

Example by Cihan Altay

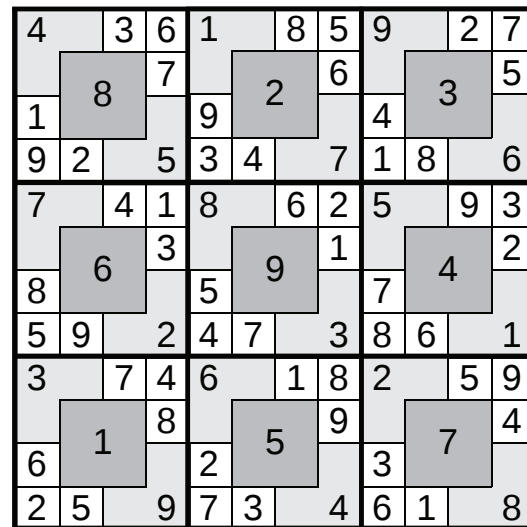
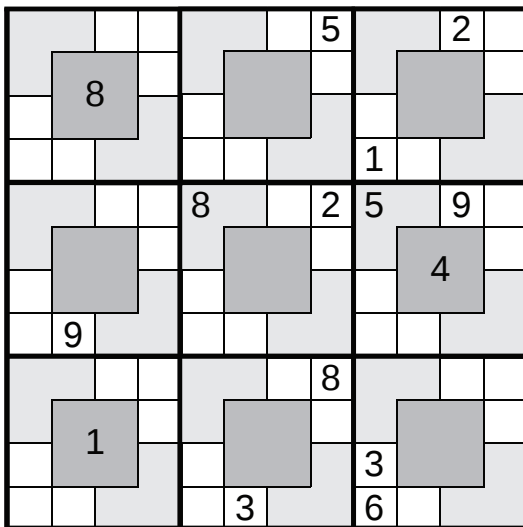
Follow standard Sudoku rules with the exception that rows and columns have been replaced by weaving diagonals that bounce about the edges of the grid. Each number appears once in every dark strand, every light strand, and each 3×3 separated box.



9.7 Tile Sudoku (65 Points)

Example from 5th World Sudoku Championship

Standard Sudoku rules. Some cells are shaded and belong to multiple rows and/or columns.



ROUND 9: GRID-BREAKING

9.8 Irregular Sudoku (70 Points)

Example from 5th World Sudoku Championship

Standard Sudoku rules, except the regions are not uniform 3×3 boxes and instead have irregular shapes.

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

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

9.9 Ten-Box Sudoku (75 Points)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules, but the grid is toroidal (i.e. “wraps around on itself”) with the left and right edges joined, as well as the top and bottom edges. Some bold 3×3 regions can be split across two different sides of the puzzle. Black squares do not get filled but rows and columns continue across them.

For grading purposes, at least one of the left/right edges and top/bottom edges must be completely filled with the numbers 1 to 9.

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

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

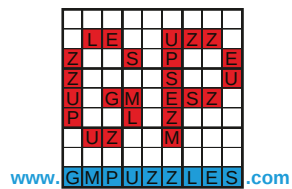


OCTOBER 17
11:30 - 12:15

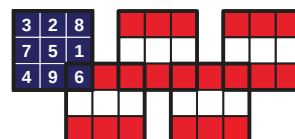
10. SUDOKU SANDBOX

1. Sudoku Sandbox	40	
2. Sudoku Sandbox	45	
3. Sudoku Sandbox	55	
4. Sudoku Sandbox	55	
5. Sudoku Sandbox	60	
6. Sudoku Sandbox	65	
7. Sudoku Sandbox	75	
8. Sudoku Sandbox	85	
9. Sudoku Sandbox	95	

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ROUND 10: SUDOKU SANDBOX

10.1-10.9 Sandbox Combinations (40, 45, 55, 55, 60, 65, 75, 85, 95 Points)

Potential rules for 10.1-10.9:

Each puzzle in this round will use two or more of the nine rules given below in combination. All puzzles will follow standard sudoku rules and use the numbers one through nine except for those with the "Isudoku" rule which uses one through eight.

9	8	2
4	6	3
1	7	5

Thermo- (as in 1.2, 3.3, 3.4): Some thermometer shapes are in the grid; numbers must be strictly increasing from the round bulb to the flat end.

3	2	1
4	5	6
9	8	7

Consecutive Pairs (as in 3.9): If a gray circle is given between two adjacent cells, then the two numbers in those cells must be consecutive. (Note: not all gray circles are given; adjacent cells without a circle may contain either consecutive numbers or nonconsecutive numbers.)

6	1	5
9	7	8
4	3	2

Arrow (as in 4.1, 4.2): Some arrow shapes are in the grid; the sum of the numbers along the path of each arrow must equal the number in the circled cell. Numbers can repeat within an arrow shape.

2	9	8
1	6	7
5	4	3

Group Sum (as in 4.9): The number given inside each circle represents the sum of the numbers in the cells touched by that circle. (Numbers can repeat around a circle if in different regions.)

4	2	8
3	5	1
9	6	7

Renban (as in 5.5, 5.6): Some regions are given inside the grid; each of these must contain a series of consecutive numbers without any repeats.

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

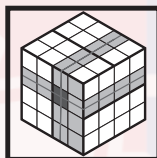
Outside (as in 8.1, 8.2): Some numbers are given outside the grid. These numbers must appear in the first three cells in the corresponding direction.

ROUND 10: SUDOKU SANDBOX

1
2 6
9
7 8

5	8	7
1	6	9
3	2	4

Shape (as in 1.7, 8.4, 8.5): There are some numbered shapes that must be put into the grid. Shapes can be rotated, but cannot be reflected.



Isodoku (as in 9.4, 9.5): The grid has a varied shape and only features the numbers one through eight in the rows and regions. Rows in an Isodoku pass through opposite parallel sides of each quadrilateral; in other words, the rows bend across the surface of the apparent cube(s) to travel in a “straight” line.

7		3	2
		1	6
8			
4	5		9

Tile (as in 9.7): Some (shaded) cells belong to multiple rows and/or columns.

The rules are all visually distinct so it should be clear what rules are being combined just by looking at the puzzle. Additional confirmation will be provided by the icons and associated instructions (same as above) in the test booklet alongside each puzzle.



OCTOBER 16

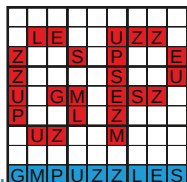
15:45 - 16:15**

11. TOO MANY CLONES

1. Too Many Clones	140	
2. Too Many Clones	140	
3. Too Many Clones	140	
4. Too Many Clones	140	
5. Too Many Clones	140	
6. Too Many Clones	125	
7. Too Many Clones	125	
8. Too Many Clones	125	
9. Too Many Clones	125	

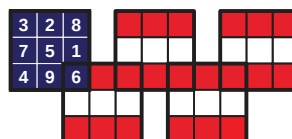
** approximate times; team rounds will be allowed to run until at least 2 teams are finished.

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ROUND 11: TOO MANY CLONES

11.1-11.9 Too Many Clones

Example by Thomas Snyder (GMPuzzles.com)

700 points for 1-5 grids (140 each) and 500 points for 6-9 grids (125 each).

(This team round is similar to individual round 6 with linked shapes across grids. Partial credit will be given for solving each of the nine sudoku puzzles as long as it is part of the complete solution.)

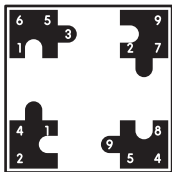
Each team will be given nine grids that follow standard sudoku rules. Additionally, the numbers in each shaded region in a grid must match with exactly one other shaded region in another grid. Regions cannot be rotated or reflected.

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

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

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

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



OCTOBER 16
16:30 - 17:00**

12. PUT IT ALL TOGETHER

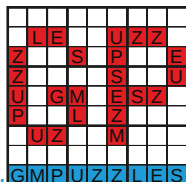
Number of Correct Fragments

75



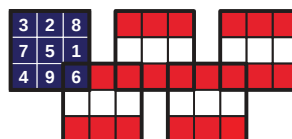
** approximate times; team rounds will be allowed to run until at least 2 teams are finished.

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ROUND 12: PUT IT ALL TOGETHER

12.1 Combined Sudoku

Example by Cihan Altay

75 points per fragment, 1200 for full grid.

With the 16 independent regions provided, assemble a 16×16 Combined Sudoku puzzle and solve that puzzle. There are two 4×4 regions representing each of eight Sudoku types: Classic (as in 1.1), Arrow (as in 4.1), Consecutive Pairs (as in 3.9), Digital (as described below), Even/Odd (as in 3.6), Inequality (as described below), Killer (as in 1.3), and Thermo (as in 1.2).

Every region is self-contained and its own mechanics do not cross over into neighboring regions. There are specific locations assigned to each type and every region must be placed onto one of those locations. When finished, a 16×16 Sudoku must form, where each number from 1 to 16 appears in each row, column, and region. All numbers must be right-side up.

No additional pieces will be provided, so teams should be mindful not to misplace their pieces.

By the end of round, teams should leave all of their regions—assembled as a Sudoku grid—on the table, to be checked and scored by judges. For unfinished grids, partial credit will be given for every correctly completed and placed region.

The following example employs 3 regions representing each one of three Sudoku types, to make a 9×9 Combined Sudoku. In Digital Sudoku, given segments must be completed to form a number, as displayed in the given string. In Inequality Sudoku, all neighbor comparisons are given in the form of ‘greater-than’ and ‘less-than’ signs (i.e., > and <).

1	2	3	4	5	<u>6</u>	7	8	<u>9</u>	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

The Layout

Inequality	Digital	Classic
Inequality	Classic	Digital
Digital	Classic	Inequality

Solution

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

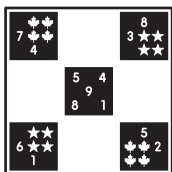
ROUND 12: PUT IT ALL TOGETHER

Sudoku Regions

							5			
	5		3							
	4		4							
					5					
		3		1	<u>9</u>					
					5					

Combined Sudoku

							4			
	3						5			
	5									
				1	9					
					5					
				4	3					
			5							



OCTOBER 17

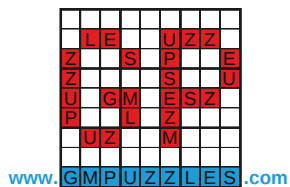
14:00 - 14:45**

13. LEAFS AND STARS ASSEMBLE

1. Sudoku	100	
2. Sudoku	100	
3. Irregular Sudoku	100	
4. Extra Region Sudoku	100	
5. Thermo-Sudoku	100	
6. Clone Sudoku	100	
7. Outside Sudoku	100	
8. Killer Sudoku	100	
9. Sudoku	100	
10. Sudoku	100	
11. Irregular Sudoku	100	
12. Extra Region Sudoku	100	
13. Thermo-Sudoku	100	
14. Clone Sudoku	100	
15. Outside Sudoku	100	
16. Killer Sudoku	100	
17. Sudoku	100	

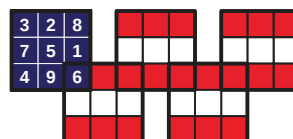
** approximate times; team rounds will be allowed to run until at least 2 teams are finished.

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ROUND 13: LEAFS AND STARS ASSEMBLE

13.1-13.17 Linked Grids

Example by Ashish Kumar (GMPuzzles.com)

100 points per grid.

Teams are provided with a collection of 17 Sudoku puzzles, five of which are classics and the remaining are two each of the following types: Irregular Sudoku (1.8), Extra Region Sudoku (1.4), Thermo-Sudoku (1.2), Clone Sudoku (1.5), Outside Sudoku (8.1, 8.2), and Killer Sudoku (1.3).

Every puzzle contains some number of 2×2 areas, each one clearly marked with either a labeled maple leaf or a labeled star. Labels range from A to P. Whenever such a labeled figure is encountered in this round, that 2×2 area must exactly match across all puzzles—order and orientation of the numbers retained. (So, for example, every instance of 'Star-M' must have the exact same fill.)

Each puzzle may have multiple solutions by itself, but there is only one solution that will complete all other grids successfully and only that specific answer will be marked correct. Teams will be awarded the total point values of all such correctly marked puzzles.

The following example employs four figures, labeled A to D, spread across five puzzles.

ROUND 13: LEAFS AND STARS ASSEMBLE

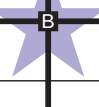
Example 13.1 Sudoku

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

Example 13.2 Extra Region Sudoku

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

Example 13.5 Sudoku

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

Example 13.3 Irregular Sudoku

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

Example 13.4 Thermo-Sudoku

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

ROUND 13: LEAFS AND STARS ASSEMBLE

Example 13.1 Sudoku

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

Example 13.2 Extra Region Sudoku

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

Example 13.5 Sudoku

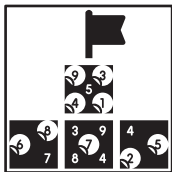
9	1	6	3	8	2	7	4	5
3	2	4	5	1	7	6	8	9
5	8	7	4	6	9	3	1	2
8	4	2	7	9	6	1	5	3
6	9	3	1	4	5	2	7	8
1	7	5	2	3	8	9	6	4
7	5	8	6	2	3	4	9	1
4	3	9	8	7	1	5	2	6
2	6	1	9	5	4	8	3	7

Example 13.3 Irregular Sudoku

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

Example 13.4 Thermo-Sudoku

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



OCTOBER 17

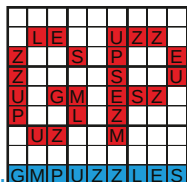
14:55 - 15:40**

14. STICK TO YOUR VISION

1. Irregular Sudoku	240	
2. Sudoku	180	
3. Irregular Sudoku	240	
4. Sudoku	180	
5. Sudoku	180	
6. Sudoku	180	

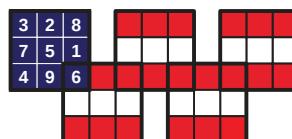
** approximate times; team rounds will be allowed to run until at least 2 teams are finished.

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ROUND 14: STICK TO YOUR VISION

Rules

In this round, each team member is provided with sheets of stickers in a unique color assigned to their seat. All other marking, writing, or erasing implements are forbidden.

No communication of any kind (verbal, written, hand gestures, etc.) will be permitted during the round. It is not permitted to put stickers in other regions for your teammates to see (and either remove or cover up) or to remove stickers after they have been placed. The way to fix a mistake in your own region is to place the correct sticker on top of the existing sticker. The other way to undo a mistake if it is in a teammate's region is to place a white sticker on top of the placed sticker; the teammate can then place a sticker on this cell when it is their turn. White stickers cannot be used on other cells (such as blank cells) to communicate information to another solver. It is also not permitted to look at other papers besides the one currently at your desk; if a team is partially finished then team members need to wait until there is a paper at their desk to attempt any solving. The intention of the round is to have a permanent mark that each solver can only place in ~25% of the grid and rely on seeing things in your brain in other parts of the puzzle to make progress alongside your teammates. These "rules" are trying to make the goals of the round more obvious and we ask teams to not try to circumvent these rules intentionally or risk disqualification.

Team members will be seated in a circular manner, each having two sheets of stickers and one puzzle page to begin the round. Stickers display the numbers 1 to 9, and some additional white stickers displaying a stylized 'X'.

There are four Classic and two Irregular Sudoku puzzles in this round. Every Sudoku has four colored sections. Each team member is only allowed to place colored stickers in a section of their own color. Stickers may be placed on top of others. Additionally, each member is allowed to place a white sticker on any cell in the grid, in order to cancel a sticker placement made by another member. Stickers must be placed firmly inside grid cells and they cannot be removed.

For the entire duration of this round, an auditory signal will be played every 90 seconds and at that moment each team member must pass their paper to the next person on their right.

Whenever a puzzle is declared finished and turned in, a new puzzle will be given to the same team member, without disrupting the rotation.

Solutions with 1 or 2 mistakes will be given partial credit (75% or 50% of points); mistakes can be in some of these forms: empty cell, incorrectly numbered cell, incorrectly colored number, and incorrect color visible even if it's covered by the correct color. More mistakes in a puzzle result in no points for that puzzle. Certain actions, such as not rotating a paper beyond a couple seconds of grace period, will be judged on a case by case basis. Judges' decisions are final.

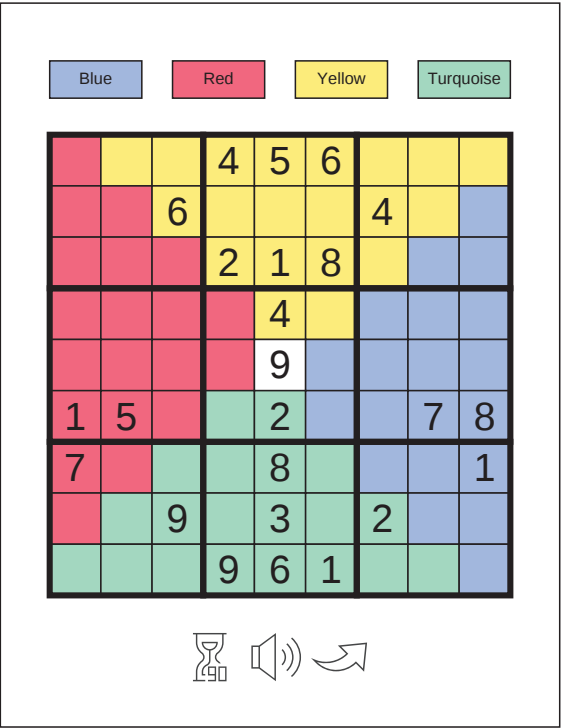
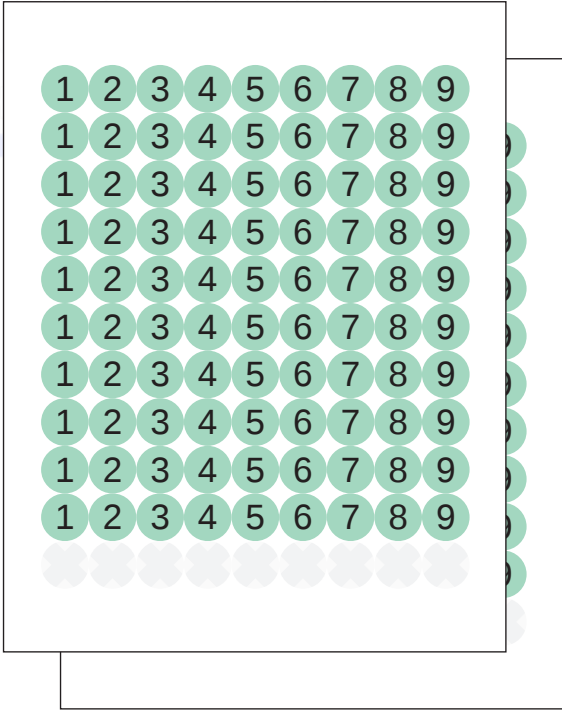
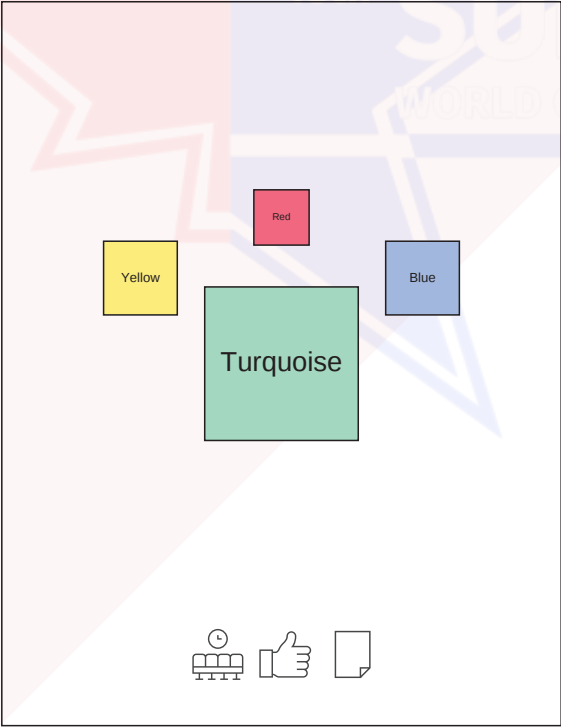
The following illustrates how the round starts (one turned-over page per solver) and what the sticker sheets and puzzle pages look like.

ROUND 14: STICK TO YOUR VISION

14.1, 14.3 Irregular Sudoku (240, 240 Points)

14.2, 14.4, 14.5, 14.6 Sudoku (180, 180, 180, 180 Points)

Example by Cihan Altay



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



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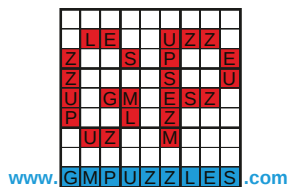
15:50 - 16:35**

15. INSTRUCTIONLESS SANDBOX

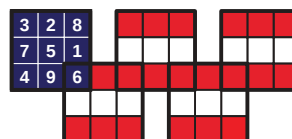
SET A - 1. Instructionless Sandbox	75	
SET A - 2. Instructionless Sandbox	75	
SET B - 1. Instructionless Sandbox	75	
SET B - 2. Instructionless Sandbox	75	
SET C - 1. Instructionless Sandbox	75	
SET C - 2. Instructionless Sandbox	75	
SET D - 1. Instructionless Sandbox	75	
SET D - 2. Instructionless Sandbox	75	
Number of Correct Parts of the Samurai Sudoku	200	

** approximate times; team rounds will be allowed to run until at least 2 teams are finished.

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ROUND 15: INSTRUCTIONLESS SANDBOX

Rules

75 points for each individual task (600 total) and 200 points for each part of samurai grid (1000 total).

Every puzzle type in this round is presented without any written instructions, only visual clues in the form of an example puzzle and its 'only correct solution'. Each puzzle follows standard Sudoku rules with the numbers 1-9, with an additional ruleset to discover.

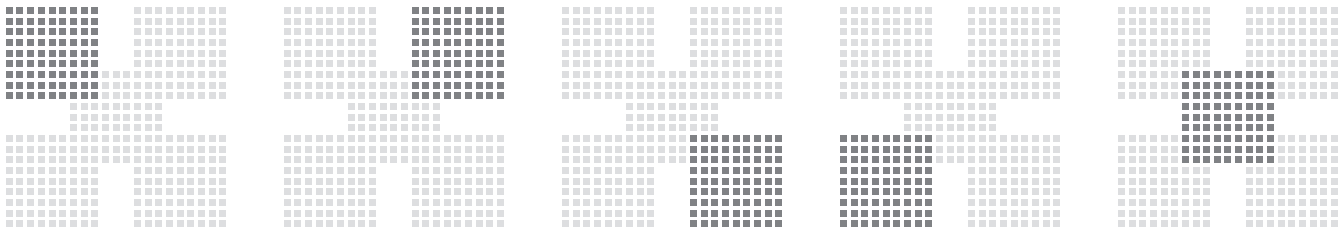
Some puzzles may have specialized designs. Solvers are not expected to follow the structure closely. (For example, in a Sudoku with dice pips, it is not a requirement to mark dots.) A clearly marked number is sufficient to indicate a cell's value.

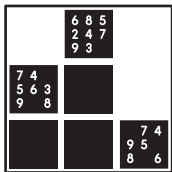
The round starts with each member of a team having two puzzles to solve. No communication of any kind (verbal, written, hand gestures, etc.) is allowed during the individual stage of the round. There are four unknown rulesets and each individual will see two of them. Player 1 sees A and B. Player 2 sees B and C. Player 3 sees C and D. Player 4 sees A and D. Members may freely move on to the final stage when they choose, with or without completing the puzzles successfully, but they will sacrifice points for the individual puzzles if they leave early. It is not strictly necessary for all members of the team to be in the final stage to complete the final Sudoku.

Once two solvers have turned in their papers, teams can proceed to the final stage (changing seats as needed to have all the finished solvers together at one table and the unfinished solvers at the other table).

In the final stage, a big Samurai Sudoku combines all the mechanics from the first stage in various ways. It is presented without any written instructions or examples. This puzzle follows traditional Samurai Sudoku rules: five 9×9 grids overlap at corner regions and every grid must be completed correctly.

Partial credit is given by how many of the five grids within the Samurai Sudoku the team completes. Individual parts of the Samurai Sudoku may have multiple solutions by themselves, but there is only one solution that will complete all grids correctly and only grids that are part of that global solution may get partial credit.





16th

WORLD SUDOKU CHAMPIONSHIP

OCTOBER 17

17:30 - 18:30

16. INDIVIDUAL PLAYOFF

1. Sudoku



2. Consecutive Pairs Sudoku



3. Arrow Sudoku



4. Diagonal Sudoku



5. Clone Sudoku



6. Sudoku



7. Outside Sudoku



8. Isudoku



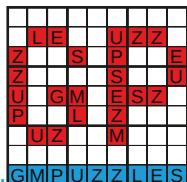
9. Clone Shape Sudoku



10. Sudoku

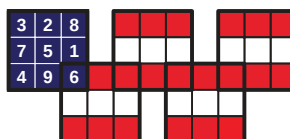


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ROUND 16: INDIVIDUAL PLAYOFF

16.1, 16.6, 16.10 Sudoku (as in 1.1)

Example by Thomas Snyder (GMPuzzles.com)

Insert a number from 1 to 9 into each cell so that no number repeats in any row, column, or bold region.

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

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

16.2 Consecutive Pairs Sudoku (as in 3.9)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Also, if a gray circle is given between two adjacent cells, then the two numbers in those cells must be consecutive. (Note: not all gray circles are given; adjacent cells without a circle may contain either consecutive numbers or nonconsecutive numbers.)

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

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

ROUND 16: INDIVIDUAL PLAYOFF

16.3 Arrow Sudoku (as in 4.1)

Standard Sudoku rules. Some arrow shapes are in the grid; the sum of the numbers along the path of each arrow must equal the number in the circled cell. Numbers can repeat within an arrow shape.

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

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

16.4 Diagonal Sudoku (as in 5.2)

Example from 5th World Sudoku Championship

Standard Sudoku rules. Also, numbers cannot repeat on the marked diagonals.

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

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

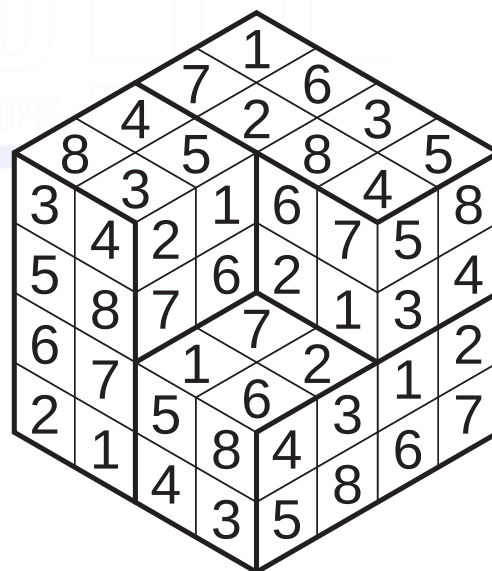
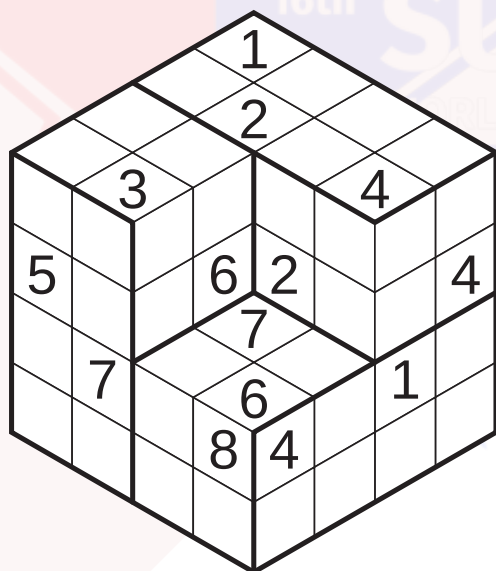
16th WORLD SUDOKU CHAMPIONSHIP - INSTRUCTIONS

ROUND 16: INDIVIDUAL PLAYOFF

16.8 Isodoku (as in 9.4)

Example by Thomas Snyder (GMPuzzles.com)

Standard Sudoku rules. Rows in Isodoku pass through opposite parallel sides of each quadrilateral; in other words, the rows bend across the surface of the apparent cube(s) to travel in a “straight” line.



16.9 Clone Shape Sudoku

Combination of Clone (see 1.5) and Shape Sudoku (see 1.7) rules.