Schedule

Monday, October 14th

9:00 AM – 9:40 AM	**Round 1**	Along the River During the Qingming Festival			→ P7
	Individual	清明上河图	🕐 40 Min	ⓘ 400 Pts	
9:50 AM –10:05 AM	**Round 2**	A Wide Expanse of Flat Land			→ P12
	Individual	一马平川	🕐 15 Min	ⓘ 150 Pts	
10:15 AM –10:55 AM	**Round 3**	Classic of Mountains and Rivers			→ P14
	Individual	山海经	🕐 40 Min	ⓘ 400 Pts	
11:10 AM –12:00 PM	**Round 4**	Perfect Match			→ P20
	Individual	珠联璧合	🕐 50 Min	ⓘ 500 Pts	
2:00 PM – 2:40 PM	**Round 5**	Nine Chapters on the Mathematical Art			→ P25
	Individual	九章算术	🕐 40 Min	ⓘ 400 Pts	
2:50 PM – 3:05 PM	**Round 6**	Double-Ring Pendant			→ P31
	Individual	双环佩	🕐 15 Min	ⓘ 150 Pts	
3:20 PM – 4:05 PM	**Round 7**	Face Changing in Sichuan Opera			→ P34
	Individual	川剧变脸	🕐 45 Min	ⓘ 450 Pts	
4:35 PM – 5:05 PM	**Round 8**	Hopscotch			→ P39
	Team	跳房子	🕐 30 Min	ⓘ 1200 Pts	
5:20 PM – 5:50 PM	**Round 9**	Chang'an City			→ P53
	Team	长安城	🕐 30 Min	ⓘ 1200 Pts	

Tuesday, October 15th

8:30 AM – 9:00 AM	**Round 10**	Hard Roads Toward Shu			→ P56
	Individual	蜀道难	🕐 30 Min	ⓘ 300 Pts	
9:10 AM –10:50 AM	**Round 11**	Complete Library of the Four Treasuries			→ P57
	Individual	四库全书	🕐 100 Min	ⓘ 1000 Pts	
11:15 AM –11:45 PM	**Round 12**	Interlocked Stratagems			→ P67
	Team	连环计	🕐 30 Min	ⓘ 1200 Pts	
12:00 PM – 12:30 PM	**Round 13**	Hundred Schools of Thought			→ P72
	Team	诸子百家	🕐 30 Min	ⓘ 1200 Pts	
3:30 PM – 5:00 PM	⊖	**Playoffs** 决赛	🕐 90 Min (~20 +20 +15 Min)		→ P76

WORLD PUZZLE FEDERATION

Individual Rounds

Points will be awarded only for fully and correctly solved puzzles. There is no partial credit unless stated otherwise in the round's description. A bonus of 10 points for each full remaining minute will be awarded to any competitor who correctly solves all puzzles in the individual round. A partial 80% bonus can be awarded if only one puzzle is incorrectly solved with no more than 2 incorrect numbers, while the incorrect puzzle receives 0 points. This bonus rule does not apply to Round 6 (Double-Ring Pendant). Please refer to the Round 6 section for more details. In case of doubt, the decision will be made in favour of the competitor; the decision of the judges is final.

In the case of a tie after 9 individual rounds, individual rankings will be broken based on scores in Round 11, then 1, 5, 2, 3, 4, 6, 7, and 10 with a tie broken by the first round with a different result. If the scores are the same in all rounds, there will be an extra puzzle to determine the final ranking.

Team Rounds

Points will be awarded only for fully and correctly solved puzzles. There is no partial credit unless stated otherwise in the round's description. For each full remaining minute, the awarded bonus points for Round 8 (Hopscotch), Round 9 (Chang'an City), and Round 12 (Interlocked Stratagems) are 40 points, and the awarded bonus points for Round 13 (Hundred Schools of Thought) is 20 points. Bonus points will not be awarded if there is any mistake. The details about the bonus points will also be specified in each team round description.

In the case of a tie after all 13 rounds, team rankings will be broken based on the team round total scores, then Round 8, 9, and 12 with a tie broken by the first round with a different result. If the scores are the same in all team rounds, then the lowest-ranked competitor among the four competitors in the tied teams will be compared, and the one with the higher ranking will be ranked higher as a team.

Competition Hall Rules

① All competitors have to sit at their pre-allocated desks 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 have to clearly write their name, team, and country

on the front page of their Puzzle Booklet into the allocated space. If this information is not complete, the organizers reserve the right not to award any points to that competitor for that round. Competitors must not open their booklets before the official start of the round.

④ 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, team members may talk to each other, but should do this with respect to other teams.

⑦ To declare round completeness, 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.

⑧ Competitors or teams who complete a round with more than 5 minutes in advance, are allowed to leave the competition hall quietly. When there is less than 5 minutes left, competitors are not allowed to leave their desks or tables in order to cause no unnecessary disruption to fellow competitors.

⑨ When 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).

⑩ 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 raise their hands up with their booklets for collecting. At the end of a round, competitors have to remain seated until all booklets have been collected. The signal to get up and leave will be given by the supervisor.

⑪ 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.

⑫ 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 competitors and not use flash photography or cameras with excessive sound.

⑬ When a competitor believes that there is a problem with a puzzle, they must clearly state that the 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.

⑭ Puzzles can be completed in any order within a round. The points' value of a puzzle is an indication of its expected difficulty, although individual solving experiences may differ. The difficulty of an example puzzle does not necessarily reflect the difficulty of the corresponding competition puzzle.

Permitted Items

① Permitted items which can be used in the competition hall (unless stated otherwise) are: pens, pencils, pencil sharpeners, erasers, rulers, blank papers, and instruction booklets annotated with notes regarding puzzle instructions and preparation notes.

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. Mobile phones and electronic devices are not permitted to be used in the competition hall. The devices have to be turned off and must not be placed on the competitor's desk.

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 equipped 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 the 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 relayed to their team.

Breach of Rules

① 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.

② The decision of the WSC tournament director (Chen Cen) is final.

The top 10 competitors after 9 individual rounds will advance to the individual playoffs. The playoffs consist of 3 rounds: the Quarterfinals for competitors ranked 7-10, the Semifinals for competitors ranked 4-6 and the winner of the Quarterfinals, and eventually the Finals for competitors ranked 1-3 and the winner of the Semifinals.

The start time of all competitors will be calculated proportionally based on the total score of the 9 individual rounds. The time difference between the 1st place and the 10th place is 10 minutes. The top competitor in each round will start directly, and the remaining competitors will start in sequence based on the start time difference. Note that regardless of the quarterfinals or semifinals winner, the start time of the next round will be brought in as the 7th or 4th place, respectively.

Quarterfinals and Semifinals are both 20 minutes, and only the winner will be determined while the remaining competitors will be ranked based on their preliminary rankings. If no one completes all the puzzles at the end of the first two rounds, the winner will be selected in the following order: 1) The competitor who completes the most puzzles; 2) The competitor who entered the latest puzzle the earliest; 3) The competitor with the highest preliminary ranking.

The Finals lasts 45 minutes. The top three will be determined in the order in which all puzzles are completed. If there is still more than one person who has not completed all puzzles at the end of the competition, those who have not completed all puzzles will be ranked in the following order: 1) The competitor who completes more puzzles will be ranked higher; 2) The competitor who enters the latest puzzle earlier will be ranked higher; 3) The competitor who has a higher preliminary ranking will be ranked higher.

The number of puzzles in the Quarterfinals, Semifinals, and Finals is 3, 3, and 5 respectively. Each round will provide 6, 6, and 9 puzzles for competitors to choose from. In each round, according to ranking order, the top three competitors will decide a puzzle to appear in the round (and specify the order of the puzzle in the round) and a puzzle that will not appear in the round. In the Finals, the 4th choosing competitor will decide one puzzle from the remaining puzzles and decide the order, but may not choose the puzzles that will not appear in the Finals. The top 1 competitor will decide the last puzzle between the remaining two puzzles.

In each playoffs round, whenever a competitor completes a puzzle, the competitor needs to raise hand to signal the judge. The judge will then write down the submission time and take 1 minute to check the solution. After 1 minute, if the solution is correct, the competitor will be allowed to solve the next puzzle; if the solution is incorrect, the judge will return the incorrect puzzle to the competitor without pointing out the error to the competitor. The competitor can submit it again at any time. Note that if the round ends within 1 minute of solution checking and the solution is correct, this puzzle will also be counted as a completed puzzle when ranking, and the time to enter the next puzzle is the submission time of the previous one plus 1 minute.

Final Remarks

① In case of a major mistake in one of the rounds, organizers reserve the right to cancel the round, either by removing it from the time schedule, or by not awarding any points for it to any of the competitors.

② The official Puzzle Booklet will contain one or multiple puzzles per page in the individual rounds. The rules of the puzzle and the corresponding points are always written next to it.

③ The official Puzzle Booklet will not contain puzzle examples. Therefore, we recommend bringing the Instruction Booklet, which contains an example of every puzzle that will be part of the championship.

④ In the team rounds, the official Puzzle Booklet may contain neither puzzle rules nor examples. It is advised to bring at least one Instruction Booklet for a team for these rounds.

⑤ In any case of inconsistency between the Instruction Booklet and the official Puzzle Booklet (e.g. rules or points distribution), the information in the latest version of the Instruction Booklet will be considered valid.

⑥ In the competition hall, a timer counting down to the end of the round will be visible to all the competitors.

Credits

We would like to thank the organizers of previous WSC & WPC, and we use parts of the Competition Rules from previous published Instruction Booklets.

All puzzles, mini-logos, and other illustrations (except for the official WSPC 2024 logo and organization logos) are created using Adobe Illustrator. Example puzzles are created by the organizers, and they cannot be commercially used. All rights have been reserved.

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Puzzle authors will remain anonymous until the Solution Booklets are distributed.

Along the River During the Qingming Festival
清明上河图

Round 1
Individual

October 14th
9:00 AM ~ 9:40 AM

🕐 40 Min
ℹ️ 400 Pts

①	Parity Lines Sudoku	45	
②	Abacus Sudoku	5	
③	Pencilmark Sudoku	90	
④	Fortress Sudoku	50	
⑤	Palindrome Sudoku	30	
⑥	Weiqi Sudoku	75	
⑦	Clone Sudoku	40	
⑧	Consecutive On-Line Sudoku	65	

The handscroll painting **Along the River During the Qingming Festival** (清明上河图) is the only surviving masterpiece of the Northern Song Dynasty painter Zhang Zeduan, and it is now located at the Palace Museum in Beijing. The painting vividly reveals the people's prosperous lifestyle and the beautiful natural scenery in the Song Dynasty capital city Bianjing (present-day Kaifeng city in Henan province). As the start-up of WSC 2024, Round 1 has a theme of diverse elements that appeared in the painting.

Puzzle 1-1

Parity Lines Sudoku — 45 pts

Apply classic sudoku rules. Each Tanghulu has a hand-grasp cell and several hawthorns in a straight line. Every number in the adjoining hawthorn has the same parity as the given number in the hand-grasp cell of the Tanghulu.

The different sizes of Tanghulu in this sudoku are for aesthetic purposes only.

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

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

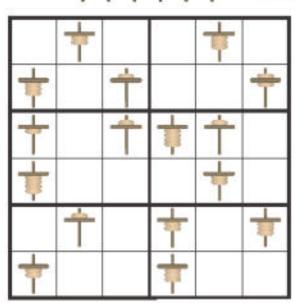## Puzzle 1-2

Abacus Sudoku — 5 pts

Apply classic sudoku rules. Clues in the cell are expressed by slidable beads, while not all beads have been placed on the abacus in the clued cells. There is no restriction for cells that remain empty. A conversion list of abacus beads to numerical numbers has been provided for convenience.

1 2 3 4 5 6

Notes
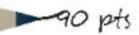
Only numerical numbers in the cells will be considered for full credit.

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

Puzzle 1-3

Pencilmark Sudoku

90 pts

Apply classic sudoku rules. Cells that have been pencil-marked include all possible candidates for the number placed in the cell. There is no restriction for cells that remain empty.

Puzzle 1-4 (Same as Finals-7)

Fortress Sudoku

50 pts

Apply classic sudoku rules. Numbers in colored cells must be greater than numbers in all orthogonally adjacent white cells.

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

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

Puzzle 1-5

Palindrome Sudoku

30 pts

Apply classic sudoku rules. Numbers placed along each marked line must form a palindromic sequence. e.g. 123454321.

8			6			5			9

(Example grid left)

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

Notes *The colored area in the competition puzzle is for aesthetic purposes only.*

Puzzle 1-6

Weiqi Sudoku

75 pts

Apply classic sudoku rules. For any black stone that is placed on the intersection of 2 by 2 cells, at the border, and the corner, the sum of numbers placed in adjoining cells is greater than 19 (2 by 2 cells), 9 (two border cells), and 4 (one corner cell), respectively.

The same rule applies to white stones except that the sum is smaller than 19, 9, and 4, respectively. All stones have been given.

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

Puzzle 1-7 (Same as Semifinals-5)
Clone Sudoku
40 pts

Apply classic sudoku rules. Numbers that are placed in the same relative position on the two colored lines are identical.

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

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

Puzzle 1-8
Consecutive On-Line Sudoku
65 pts

Apply classic sudoku rules. The difference of each pair of numbers that are placed in the adjoining two cells along the marked lines is 1.

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

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

Notes — *The colored area in the competition puzzle is for aesthetic purposes only.*

A Wide Expanse of Flat Land
一马平川

Round 2
Individual

①	Classic Sudoku	10	
②	Classic Sudoku	15	
③	Classic Sudoku	15	
④	Classic Sudoku	20	
⑤	Classic Sudoku	20	
⑥	Classic Sudoku	20	
⑦	Classic Sudoku	25	
⑧	Classic Sudoku	25	

A wide **Expanse of Flat Land** (一马平川) is a Chinese idiom that characterizes a wide or flat land where the horse can gallop freely on the land. Round 2 is a classic sudoku round for fast sprinting.

Puzzle 2-1 ~ 2-8 (Same as Puzzle 8-1, Round 10, and Playoffs)

Classic Sudoku

Fill each empty cell with numbers from 1 to 9 so that each row, column, and outlined 3×3 box contains 1 to 9 exactly once.

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

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

Classic of Mountains and Rivers
山海经

Round 3
Individual

October 14th
10:15 AM ~ 10:55 AM

40 Min
400 Pts

①	Odd Sudoku	25
②	Renban Sudoku	30
③	Extra Regions Sudoku	30
④	First Seen Odd / Even Sudoku	60
⑤	Blackout Sudoku	60
⑥	Consecutive Sudoku	30
⑦	Anti-Knight Sudoku	50
⑧	Argyle Sudoku	40
⑨	3D Sudoku	75

Classic of Mountains and Rivers (山海经) is an ancient social life encyclopedia where the early versions may have existed since the 4th century BCE. The book contains various knowledge such as ancient geography, history, astronomy, animals, plants, and medicine, providing an important reference for modern researchers to study ancient culture. Round 3 includes 9 common Sudoku variants that have appeared for a long time.

Puzzle 3-1

Odd Sudoku

25 pts

Apply classic sudoku rules. The numbers placed in each shaded cell are odd.

Puzzle 3-2 (Same as Puzzle 8-22)

Renban Sudoku

30 pts

Apply classic sudoku rules. Each renban line contains a non-repeating set of consecutive numbers. There is no restriction on the ordering of numbers in each renban line.

Puzzle 3-3 (Same as Puzzle Semifinals-2)

Extra Regions Sudoku

30 pts

Apply classic sudoku rules. Each region with different shades of color also contains numbers 1 to 9 exactly once.

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

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

Puzzle 3-4

First Seen Odd / Even Sudoku

60 pts

Apply classic sudoku rules. For clues outside the grid, odd clues indicate the first odd number that can be seen from the corresponding direction, ignoring all even numbers. Similarly, even clues indicate the first even number that can be seen from the corresponding direction, ignoring all odd numbers.

	16	78	29	25	34	14	38	29	47	
67										14
18				2	9	4				67
34			3				1			56
23		1		6		7		8		89
56		6						1		23
89		9		3		2		5		56
49			8			5				27
23			7	8	5					14
47										38
	27	45	16	47	12	29	69	34	18	

	16	78	29	25	34	14	38	29	47	
67	6	7	9	5	3	1	8	2	4	14
18	1	8	5	2	9	4	3	6	7	67
34	4	2	3	8	7	6	1	9	5	56
23	3	1	2	6	5	7	4	8	9	89
56	5	6	7	9	4	8	2	1	3	23
89	8	9	4	3	1	2	7	5	6	56
49	9	4	8	1	6	3	5	7	2	27
23	2	3	6	7	8	5	9	4	1	14
47	7	5	1	4	2	9	6	3	8	38
	27	45	16	47	12	29	69	34	18	

Puzzle 3-5

Blackout Sudoku — 60 pts

Fill each empty cell with numbers from 1 to 9 so that each row, column, and outlined 3×3 box contains distinct numbers.

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

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

Puzzle 3-6 (Same as Puzzle Finals-5)
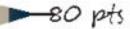
Consecutive Sudoku — 30 pts

Apply classic sudoku rules. When two adjacent cells contain consecutive numbers, a gray bar is placed between the two cells. All bars that satisfy the above condition have been given.

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

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

Puzzle 3-7 (Same as Puzzle 8-17 & Quarterfinals-2)
Anti-Knight Sudoku — 50 pts

Apply classic sudoku rules. Numbers placed in a pair of cells that are linked by a chess Knight's move must be different.

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

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

Puzzle 3-8 (Same as Puzzle 8-2)
Argyle Sudoku — 40 pts

Apply classic sudoku rules. Every marked diagonal line contains distinctive numbers.

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

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

Puzzle 3-9 (Same as Puzzle 8-14)

3D Sudoku

75 pts

Fill each empty cell with numbers from 1 to 8 so that each 3D perspective direction and outlined region contains each number exactly once.

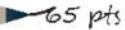Geometry of the competition puzzle may differ from the example.

Perfect Match
珠联璧合

Round 4
Individual

October 14th
11:10 AM ~ 12:00 PM

🕐 50 Min
ℹ️ 500 Pts

①	3D Consecutive Sudoku	50	
②	Star Battle Passage Sudoku	80	
③	Penta Diagonal Sudoku	60	
④	Sum Next to Nine Renban Sudoku	65	
⑤	Blackout Skyscraper Sudoku	70	
⑥	No Touch Windoku	75	
⑦	Superconsecutive Extra Region Sudoku	60	
⑧	Pointing Arrow Sudoku	40	

The Chinese idiom **Perfect Match** (珠联璧合) describes the ideal combination of a string of pearl and jade in the literal sense. It also has a metaphor for a perfect match of beautiful things or eminent people. Round 4 features 8 sudoku variants and each of them combined from two complementing variant rules.

Puzzle 4-1

3D Consecutive Sudoku — 50 pts

3D Rule Fill each empty cell with numbers from 1 to 8 so that each 3D perspective direction and outlined region contains each number exactly once. Geometry of the competition puzzle may differ from the example;

Consecutive Rule When two adjacent cells contain consecutive numbers, a gray bar is placed between the two cells. All bars that satisfy the above condition have been given.

Puzzle 4-2

Star Battle Passage Sudoku — 80 pts

Star Battle Rule Fill each empty cell with either numbers from 1 to 8 or a star so that each row, column, and outlined 3×3 box contains 1 to 8 and a star exactly once. Stars cannot be placed in adjoining cells that share an edge or corner with other stars and cannot orthogonally share an edge with the passage. Stars are allowed to touch the passage at corners;

Passage Rule There is exactly one orthogonally connected path of cells in the grid containing either odd numbers only or even numbers only, which connects the shaded top left corner cell to the shaded bottom right corner cell.

Notes	*Fill in all numerical numbers and stars correctly for full credits. It is not necessary to draw the passage.*

Puzzle 4-3

Penta Diagonal Sudoku — 60 pts

Penta Rule Similar to the 3D rule, fill each empty cell with numbers from 1 to 8 so that each 3D perspective direction and outlined region contains each number exactly once;

Diagonal Rule Each dashed diagonal line of the pentagram in the grid contains numbers from 1 to 8 exactly once.

Puzzle 4-4

Sum Next to Nine Renban Sudoku — 65 pts

Sum Next to Nine Rule Apply classic sudoku rules. Clues outside the grid are the sum of the numbers in the cell that are orthogonally adjacent to the 9 along the direction;

Renban Rule Each renban line contains a non-repeating set of consecutive numbers. There is no restriction on the ordering of numbers on each renban line.

Puzzle 4-5

Blackout Skyscraper Sudoku — 70 pts

Blackout Rule Fill each empty cell with either a number from 1 to 9 so that each row, column, and outlined 3×3 box contains distinct numbers;

Skyscraper Rule The number in each cell represents the height of a building, and the clues outside the grid indicate the number of buildings visible in the direction seen from the position of the clues. Taller buildings will block the view of any shorter buildings behind them. Blackout cells do not contain numbers, so they are not counted as a building and do not block the view.

Puzzle 4-6

No Touch Windoku — 75 pts

No Touch Rule Apply classic sudoku rules. Identical numbers must not touch each other diagonally;

Windoku Rule All 4 colored square regions also contain numbers from 1 to 9 exactly once.

Puzzle 4-7

Superconsecutive Extra Region Sudoku — 60 pts

Superconsecutive Rule Apply classic sudoku rules. There is exactly one circled number N in each outlined 3×3 box. When two adjacent cells in the same 3×3 box contain numbers that differ exactly by N in the located box, a white dot is placed between the two cells. When two cells are in different but adjacent boxes containing adjacent numbers that differ by either of the Ns in two boxes, a white dot is also placed between the two cells. All white dots that satisfy the above condition have been given;

Extra Region Rule The circled number in each 3×3 box also contains numbers 1 to 9 exactly once.

Puzzle 4-8

Pointing Arrow Sudoku — 40 pts

Pointing Rule Apply classic sudoku rules. Each number placed in the cell with a circle appears at least once in the pointing direction starting from the end of the corresponding arrow;

Arrow Rule Each number placed in the cell with a circle is the sum of the numbers placed along the corresponding arrow passes through. Numbers may repeat on the arrows.

THE 2024
17th SUDOKU & 31st PUZZLE
WORLD CHAMPIONSHIP

Round 5
Individual

October 14th
2:00 PM ~ 2:40 PM

🕐 40 Min
ℹ 400 Pts

①	Multiples Sudoku	30	
②	Positional X-Sums Sudoku	80	
③	Arrow Sudoku	50	
④	Ratio Sudoku	50	
⑤	Rectangular Multiplication Sudoku	55	
⑥	Little Killer Sudoku	40	
⑦	Upper Right Heavy Killer Sudoku	35	
⑧	Killer Sudoku	30	
⑨	24-Trio Sudoku	30	

As one of the earliest surviving mathematical texts in China, the book **Nine Chapters on the Mathematical Art** (九章算术) includes 9 chapters with 246 mathematics problems followed by the solution and its explanation. It showcases the great success of ancient China in mathematics. Round 5 includes 9 computational Sudoku variants.

Puzzle 5-1

Multiples Sudoku — 30 pts

Apply classic sudoku rules. Treat the cells in each cage as a two-digit number (reading left to right or top to bottom), it must be a multiple of the clue in the upper-left corner of the corresponding cage.

e.g. For a clue of 39, the two-digit number in the cage can be 39 or 78.

Puzzle 5-2

Positional X-Sums Sudoku — 80 pts

Apply classic sudoku rules. The clues outside the grid indicate the sum of the numbers in the 1st and Xth cells in the corresponding direction, where X is the number in the first cell.

Puzzle 5-3 (Same as Puzzle 2-24 & Finals-3)

Arrow Sudoku

50 pts

Apply classic sudoku rules. Each number placed in the cell with a circle is the sum of the numbers placed along the corresponding arrow passes through. Numbers may repeat on the arrows.
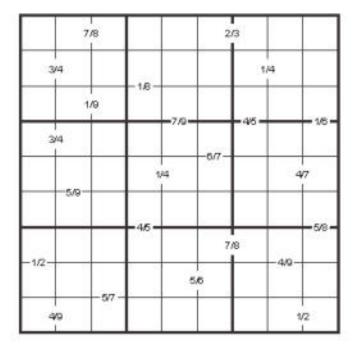
Puzzle 5-4 (Same as Puzzle Finals-4)

Ratio Sudoku

50 pts

Apply classic sudoku rules. The numbers placed in the adjacent cells must satisfy the ratio given on the edge between them.
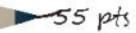
Nine Chapters on the Mathematical Art

Puzzle 5-5

Rectangular Multiplication Sudoku — 55 pts

Apply classic sudoku rules. The cells inside each rectangle form a column multiplication where the two-digit or three-digit number in the second line is equal to the two-digit or three-digit number in the first line multiplied by the given number (reading left to right).
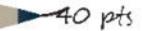
Left grid (given):

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

Right grid (solution):

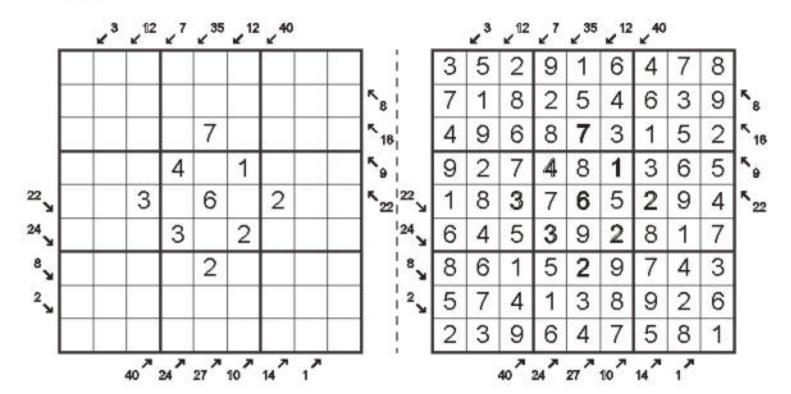| 1 | 6 ×3 | 7 | 8 | 2 | 9 | 4 | 3 | 5 |
4	8	3	5	6	7	9	2	1
9	5	2	3 ×4	4	1	7	8 ×3	6
6	1	9	2	8	5	3	4	7
7	3	5	1	9	4	8	6	2
8	2	4	6 ×4	7	3	1 ×2	5	9
5	9	8	4	1	6	2	7	3
2	7	6	9	3	8	5	1	4 ×7
3	4	1	7	5	2	6	9	8

Puzzle 5-6

Little Killer Sudoku — 40 pts

Apply classic sudoku rules. Clues outside the grid indicate the sum of numbers along the diagonal path of the corresponding arrow direction. Numbers may repeat along the diagonal path.
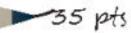
Left grid (given):

Top clues: 3, 12, 7, 35, 12, 40
Right clues: 8, 16, 9, 22
Left clues: 22, 24, 8, 2
Bottom clues: 40, 24, 27, 10, 14, 1

			7					
		4		1				
	3		6		2			
		3		2				
			2					

Right grid (solution):

Top clues: 3, 12, 7, 35, 12, 40
Right clues: 8, 16, 9, 22
Left clues: 22, 24, 8, 2
Bottom clues: 40, 24, 27, 10, 14, 1

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

Puzzle 5-7

Upper Right Heavy Killer Sudoku — 35 pts

Apply classic sudoku rules. For any number in the cell that is smaller than the one in the diagonally adjacent upper right cell, there must be a clue in the cell indicating the sum of two numbers. For cells without a clue, the number cannot be smaller than the one in the diagonally adjacent upper right cell.
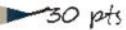
Solution grid:

3	8	2	7	9	1	5	4	6
9	4	7	2^{11}	5	6	8	1^{7}	3
6	1^{8}	5	8	4^{10}	3^{11}	2	7	9
4	6	8	3^{7}	1^{4}	7	9	5^{14}	2
2^{8}	5^{13}	3	4	6^{13}	9	7	8	1
7	9	1^{5}	5^{11}	8^{17}	2^{9}	3^{11}	6	4
1^{10}	2	6	9	7	8	4^{10}	3^{7}	5
8	3^{9}	4^{13}	1^{8}	2^{10}	5	6	9	7
5	7	9	6	3^{8}	4^{10}	1^{10}	2^{9}	8

Puzzle 5-8 (Same as Puzzle Quarterfinals-6)

Killer Sudoku — 30 pts

Apply classic sudoku rules. The numbered clues in each cage are the sum of all numbers in the corresponding cage, while numbers must not repeat within the same cage.

Solution grid:

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

Puzzle 5-4

24-Trio Sudoku

30 pts

Apply classic sudoku rules. In addition, for any orthogonally or diagonally adjacent three cells connected by straight double lines, the numbers in those cells must be able to derive 24 through the 4 math operations (+, -, ×, ÷) with each of the three numbers used exactly once while math operations may be used again. There is no restriction on using the same order of numbers in the computation operations as shown on the line. Brackets are allowed in the operations.

e.g. 3 3 5 ⟹ 24 = (3 + 5) × 3.

Double-Ring Pendant
双环佩

Round 6
Individual

⬡→ Double-Ring Sudoku   *150*

Double-Ring Pendant (双环佩) is a type of ancient Chinese pendant with two rotatable rings. When people are walking with the pendant, the vibration sound caused by the ring swing can be used to correct walking steps to stay calm and steady. The sound can be pleasant only when the two rings are placed suitably. In Round 6, the two Sudoku grids need to echo with each other to fulfill the rules.

Double-Ring Pendant

Round 6 consists of two 9×9 Irregular Sudoku puzzles. There are multiple solutions to both Sudoku when solving independently, while there is exactly one mutual solution that fulfills the divided irregular regions in both Sudoku.

Fill numbers in one of the two Sudoku grids are sufficient for full credit. There is one pendant underneath both Sudoku grids for the competitor to indicate the one for grading. Competitors may draw anything such as a circle or a checkmark inside the ring, as long as it is discernable. When there is no clear indication of which one is for grading (e.g. both pendants are marked or not marked), the judges will grade both puzzles. If all filled-in numbers in both puzzles are correct, the one with more numbers will be considered for grading. If there is any wrong number in either Sudoku grid, the competitor will receive a score of 0 without any bonus in Round 6.
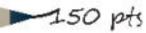
The total score for Round 6 is 150. The rules for the remaining minute bonus are different than other individual rounds, and a bonus of 5 points for each full remaining minute will be awarded to any competitor who correctly solves the puzzle. If the submitted solution is incomplete, the largest perceptible number in each cell will be regarded as the filled-in number. The number must take up more than half of the cell for grading. If only small numbers appear in a cell, the cell will be regarded as an empty cell.

When all filled-in numbers in the indicated solution are correct, 2 points will be given for each correct number. If there is any incorrect number in the solution, the competitor will receive a score of 0 without any bonus in Round 6. In case of doubt, the decision of the judges is final.

Double-Ring Sudoku

150 pts

Fill each empty cell with numbers from 1 to 9 so that each row, column, and outlined 9-cell region in both grids contains each number exactly once.

There is exactly one mutual solution that fulfills the divided irregular regions in both Sudoku.

Instruction

*Fill in numbers for **one** of the two grids is sufficient for full credit. Mark the corresponding double-ring for scoring. Note that only the grid with indicated double-ring will be checked for completeness.*

Face Changing in Sichuan Opera
川剧变脸

Round 7
Individual

①	Large-or-Sum Sudoku	85
②	Unmarked Thermo Sudoku	30
③	Outside Sequence Sudoku	45
④	Liar Sudoku	65
⑤	Arrow-or-Thermo Sudoku	40
⑥	Yin-yang Sudoku	50
⑦	Local XV Sudoku	55
⑧	Uncertain Inequality Sudoku	80

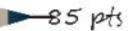**Face Changing in Sichuan Opera** (川剧变脸) is an important component of the ancient Chinese dramatic art performance in Sichuan opera. During the performance, the performer will change the face to the other instantaneously and repeatedly. Just like the true face of the actor in the performance is hidden under layers of the face, competitors also need to discern the underlying faces of Round 7 Sudoku variants rules.

Face Changing in Sichuan Opera

Puzzle 7-1

Large-or-Sum Sudoku

85 pts

Apply classic sudoku rules. The clue between two adjacent cells is either the larger number or the sum of the numbers in those cells.

Puzzle 7-2

Unmarked Thermo Sudoku

30 pts

Apply classic sudoku rules. Each thermometer forms a sequence of strictly increasing numbers placed along the cells starting from the bulb. The bulb of each thermometer has not been given.
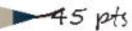
Puzzle 7-3

Outside Sequence Sudoku — 45 pts

Apply classic sudoku rules. The clues outside the grid must appear in their corresponding direction with the same sequence in adjoining cells. The question mark "?" can be any number that forms the sequence.
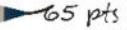
Puzzle grid (left):

Top clues (left to right columns): `3 6 ? 4 8` | `2 5 1` | | `5 1 8 4` | `2 9 1 7` | `8 9 3` | | `2 4 ?` | `1 6 5 3`

							9	2
								8
9								
2	4							7

Left clues (top to bottom rows): `1 2 6 4 7`, `6 7 ? 8 9`, `3 7 ? ? 2`, `7 8 1 2 5`, (blank), `5 6 2 4`, `7 6 5 2`, `8 ? 5 ?`

Solution grid (right):

Top clues: `3 6 ? 4 8` | `2 5 1` | | `5 1 8 4` | `2 9 1 7` | `8 9 3` | | `2 4 ?` | `1 6 5 3`

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

Left clues: `1 2 6 4 7`, `6 7 ? 8 9`, `3 7 ? ? 2`, `7 8 1 2 5`, (blank), `5 6 2 4`, `7 6 5 2`, `8 ? 5 ?`

Puzzle 7-4

Liar Sudoku — 65 pts

Apply classic sudoku rules. Exactly one given number in each row, column, and the outlined 3×3 box is incorrect.

Puzzle grid (left):

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

Solution grid (right) (circled numbers indicate corrections):

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

Notes: *It is necessary to correct the wrong numbers in the grid for full credits.*

Puzzle 7-5

Arrow-or-Thermo Sudoku — 40 pts

Apply classic sudoku rules. Each marked sequence should follow either arrow sudoku rules or thermo sudoku rules:

- Arrow Rule: Each number placed in the cell with a circle is the sum of the numbers placed along the corresponding arrow passes through. Numbers may repeat on the arrows;

- Thermo Rule: Each thermometer forms a sequence of strictly increasing numbers placed along the cells starting from the bulb.

Puzzle 7-6

Yin-yang Sudoku — 50 pts

Apply classic sudoku rules. All numbers above the dashed line that are orthogonally adjacent to 1 are prime numbers (in completely white cells); All numbers below the dashed line that are orthogonally adjacent to 1 are composite numbers (in completely gray cells). There is no restriction for numbers on the dashed line.
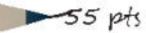
Puzzle 7-7

Local XV Sudoku

55 pts

Apply classic sudoku rules. All adjacent cells containing numbers with the sum of 5 are marked with "V", and all adjacent cells containing numbers with the sum of 10 are marked with "X". In addition, all numbers of 5 will be treated as the index of the located outlined 3×3 box when taking a sum with numbers in adjacent cells.

e.g. The number 5 in the upper left, middle, and lower right 3×3 box will be treated as 1, 5, and 9 when taking the sum, respectively.

Puzzle 7-8

Uncertain Inequality Sudoku

80 pts

Apply classic sudoku rules. All adjacent cells with a marked inequality relation between them should follow that relation. In addition, there is exactly one given inequality relation in the 9×9 grid that is incorrect.

Notes — *It is not necessary to mark the wrong inequality relation in the grid.*

Hopscotch
跳房子

Round 8
Team

1. Classic Sudoku
2. Argyle Sudoku
3. XV Sudoku
4. Kropki Sudoku
5. Mathdoku
6. Between 1 & 9 Sudoku
7. Inequality Sudoku
8. Rossini Sudoku
9. Quadruple Sudoku
10. Clock Faces Sudoku
11. Odd / Even Sudoku
12. Odd-Even-Big-Small Sudoku

13. Irregular Sudoku
14. 3D Sudoku
15. Windoku
16. Pyramid Sudoku
17. Anti-Knight Sudoku
18. Disjoint Groups Sudoku
19. Search Nine Sudoku
20. Irregular Dots Sudoku
21. Skyscraper Sudoku
22. Renban Sudoku
23. Outside Sudoku
24. Arrow Sudoku

In China, **Hopscotch** (跳房子) originated from the Qing Dynasty and is popular among young children until today. The hopscotch grids can still be found in some parks and primary schools. Round 8 is a team round developed from the idea of this popular game, involving teamwork and fun physical exercises.

Hopscotch

Round 8 consists of a set of hopscotch props and 24 Sudoku puzzles. A zoomed-out hopscotch grid is shown on the left. It will be printed on a rectangular carpet with a size 150CM × 90CM in the competition. There are an unknown amount of puzzles that are put into a pile in each grid. 4 competitors in the team need to take turns throwing sandbags outside the #1 Grid to select the hopscotch grid. The team can decide their throwing sequence themselves. In the grid where the sandbag falls, the competitor who throws the sandbag must solve the top unrevealed puzzle that corresponds to the grid independently. In this situation, the competitor may not throw the sandbag again until the puzzle is submitted (either finish or give up the puzzle).

After submitting the puzzle, the competitor can throw a sandbag again to choose the next grid with its top unrevealed puzzle. Submitted puzzles cannot be given back to the team for any changes. After all 24 puzzles are submitted, Round 8 can be considered as finished and the remaining time will start counting for the bonus. Competitors in each team cannot communicate or help each other in any way during the puzzle-solving process, and competitors may not exchange the puzzles they are working on. It is necessary to write the team name below each puzzle.

If the sandbag does not fall within any square (including but not limited to falling outside the border or on the borderline between two grids) or falls inside the square where no puzzle is available for solving, the competitor needs to throw again until the puzzle is confirmed. The process of throwing and picking up puzzles is included in the Round 8 30-minute countdown. If there is only one grid with unsolved puzzles left, then competitors can solve the puzzles in order without throwing the sandbag again.

The points for each puzzle in this round will be distributed according to the difficulty, with a total score of

1200 points. If the team completes and all the puzzles are correct, a 40-point bonus will be awarded for each full remaining minute.

The 24 Sudoku puzzle types are shown on the Round 8 menu page. The correspondence of specific puzzles to the numbered grid, the order of each puzzle within each grid, and the points for each puzzle will be listed on the program one day before the competition. The weight of the sandbag is about 250 grams, and competitors will have the opportunity to throw it during the Q&A session.

Each national Team A will be assigned to a judge with two sandbags and a hopscotch carpet on the floor. A piece of paper with a list of puzzles, grid correspondence, and puzzle order corresponding to each grid will also be provided to each team. All Team A will be divided into groups of 2 teams and each pair of Team A will be seated as shown in the diagram above. The specific seats for each team will be given on the day of Round 8. Competitors can only communicate outside the team's hopscotch carpet area and can only communicate with the judge in the designated area. When there are still unrevealed puzzles, all competitors who are not throwing or solving puzzles can only stand by in the communication area. When there is no unrevealed puzzle, competitors can return to their seats. After all puzzles are submitted, they can follow the competition hall guidelines and leave quietly. Any form of communication is still prohibited.

B Teams and UN Teams will sit with their team members around a table, with two members on each side. Multiple teams will share the same set of hopscotch props, and competitors from different teams can throw at the same time and pick their corresponding puzzles. However, it is not allowed to interfere with other teams during the competition.

Puzzle 8-1 (Same as Puzzle Round 2, Round 10, and Playoffs)

Classic Sudoku

Fill each empty cell with numbers from 1 to 9 so that each row, column, and outlined 3×3 box contains 1 to 9 exactly once.

Puzzle 8-2 (Same as Puzzle 3-8)

Argyle Sudoku

Apply classic sudoku rules. Every marked diagonal line contains distinctive numbers.

Puzzle 8-3 (Same as Puzzle Quarterfinals-5)

XV Sudoku

Apply classic sudoku rules. All adjacent cells containing numbers with the sum of 5 are marked with "V", and all adjacent cells containing numbers with the sum of 10 are marked with "X".

Left grid (clues):

			5	3				
					7			
					5			
		9						
8								
9								
	1	7						

Right grid (solution):

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

Puzzle 8-4 (Same as Puzzle 11-14)

Kropki Sudoku

Apply classic sudoku rules. Adjacent cells containing numbers that differ by 1 are marked with a white dot. Adjacent cells containing numbers with a ratio of 2 are marked with a black dot. Adjacent cells containing 1 and 2 can be marked by either a black or a white dot. All dots that satisfy the above condition have been given.

Puzzle 8-5

Mathdoku

Apply classic sudoku rules. There are exactly 4 clues in each outlined 3×3 box, where those clues are the results of math operations (+, -, ×, ÷). All 4 math operations must be used exactly once in each box.

Puzzle 8-6

Between 1 & 9 Sudoku

Apply classic sudoku rules. The numbered clues outside the grid indicate the sum of all numbers that lie between 1 and 9 in the corresponding row or column (1 and 9 are not included in the sum).

Puzzle 8-7

Inequality Sudoku

Apply classic sudoku rules. All adjacent cells with a marked inequality relation between them should follow that relation.

Puzzle 8-8 (Same as Puzzle 11-10 & Finals-2)

Rossini Sudoku

Apply classic sudoku rules. The arrows outside the grid indicate either the ascending or descending order of the first 3 numbers (the largest number is located in the direction that the arrow points to). If there is no arrow outside, then the first 3 numbers are neither in ascending nor descending order.

Puzzle grid (givens):

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

Solution grid:

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

Puzzle 8-9 (Same as Puzzle Semifinals-4)

Quadruple Sudoku

Apply classic sudoku rules. Some clued numbers are given at intersections of two crossing grid lines, where those numbers are the full set of numbers placed in the 4 adjacent cells.

Quadruple clues at intersections:
1356, 2788, 4579, 3445, 2346, 1269, 1489, 2367, 4567, 1369, 1256, 5789, 2478, 4569, 2689, 1256, 3578, 3478, 1689, 4579, 1237, 2345, 2489, 1367, 3578, 3579, 2456, 1245, 7889, 1346

Solution grid:

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

Puzzle 8-10

Clock Faces Sudoku

Apply classic sudoku rules. For each white circle in the grid, the 4 adjoining numbers around the circle are placed in a clockwise increasing order starting from one of the four cells. For each black circle in the grid, the 4 adjoining numbers around the circle are placed in an anticlockwise increasing order starting from one of the four cells. All circles that satisfy the above condition have been given.

Puzzle 8-11 (Same as Puzzle Semifinals-3)

Odd / Even Sudoku

Apply classic sudoku rules. The numbers in each circle are odd, and the numbers in each square are even.

Puzzle 8-12

Odd-Even-Big-Small Sudoku

Fill each empty cell with numbers from 1 to 8 so that each row, column, and outlined 2×4 box contains 1 to 8 exactly once. The clues outside the grid indicate the property of the numbers in the first 2 cells in the corresponding direction:

奇 Odd = {1, 3, 5, 7}; 偶 Even = {2, 4, 6, 8}; 大 Big = {5, 6, 7, 8}; 小 Small = {1, 2, 3, 4}.

Left grid (partially filled):

Top clues: 小 Small, 小 Small, 大 Big, 小 Small, 奇 Odd, 偶 Even

							2
	1			2			
		3	4				
		5	6				
	7			8			
6							

Left clues (top to bottom): 奇 Odd, 偶 Even, 大 Big, 偶 Even, 小 Small, 小 Small

Right clues (top to bottom): 大 Big, 奇 Odd, 小 Small, 小 Small, 大 Big

Bottom clues: 奇 Odd, 小 Small, 大 Big, 小 Small, 奇 Odd, 大 Big, 偶 Even

Right grid (solution):

Top clues: 小 Small, 小 Small, 大 Big, 小 Small, 奇 Odd, 偶 Even

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

Left clues (top to bottom): 奇 Odd, 偶 Even, 大 Big, 偶 Even, 小 Small, 小 Small

Right clues (top to bottom): 大 Big, 奇 Odd, 小 Small, 小 Small, 大 Big

Bottom clues: 奇 Odd, 小 Small, 大 Big, 小 Small, 奇 Odd, 大 Big, 偶 Even

Puzzle 8-13 (Same as Puzzle Semifinals-6)

Irregular Sudoku

Fill each empty cell with numbers from 1 to 9 so that each row, column, and outlined 9-cell region contains each number exactly once.

Left grid (partially filled):

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

Right grid (solution):

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

Puzzle 8-14 (Same as Puzzle 3-9)

3D Sudoku

Fill each empty cell with numbers from 1 to 8 so that each 3D perspective direction and outlined region contains each number exactly once.

Puzzle 8-15

Windoku

Apply classic sudoku rules. All 4 shaded square regions also contain numbers from 1 to 9 exactly once.

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

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

Puzzle 8-16 (Same as Puzzle 11-3 & Quarterfinals-3)

Pyramid Sudoku

Apply classic sudoku rules. Each colored pyramid-shaped region also contains numbers 1 to 9 exactly once.

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

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

Puzzle 8-17 (Same as Puzzle 3-7 & Quarterfinals-2)

Anti-Knight Sudoku

Apply classic sudoku rules. Numbers placed in a pair of cells that are linked by a chess Knight's move must be different.

Puzzle 8-18 (Same as Puzzle 11-5)

Disjoint Groups Sudoku

Apply classic sudoku rules. Cells that appear in the same relative position in the nine 3×3 boxes also contain 1 to 9 exactly once.

Puzzle 8-19

Search Nine Sudoku

Apply classic sudoku rules. Some arrows are given in the grid point to the number 9 in the pointing row or column with an orthogonal distance that is exactly the number in the cell with the arrow. There is no restriction for cells without an arrow.
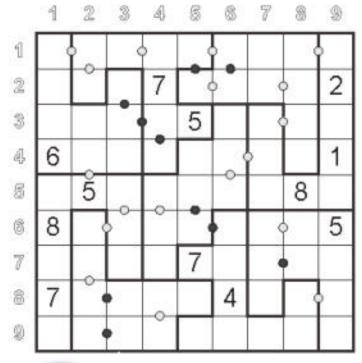
Puzzle 8-20

Irregular Dots Sudoku

Apply irregular sudoku rules. Adjacent cells that contain numbers with a difference or a sum the same as the index of the corresponding row or column (where both cells lie) are marked with a white dot or a black dot, respectively. All dots that satisfy the above condition have been given, and the indexes of each row and column are shown outside the grid.

Solution grid (right):

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

Puzzle 8-21

Skyscraper Sudoku

Apply classic sudoku rules. The number in each cell represents the height of a building, and the clues outside the grid indicate the number of buildings visible in the direction seen from the position of the clues. Taller buildings will block the view of any shorter buildings behind them.

Solution grid (right), column clues top: 3 2 1 2 2 4 4 3 3; bottom: 2 4 6 1 5 4 2 3 6:

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

Puzzle 8-22 (Same as Puzzle 3-2)

Renban Sudoku

Apply classic sudoku rules. Each colored renban region contains a non-repeating set of consecutive numbers. There is no restriction on the ordering of numbers in each renban region.
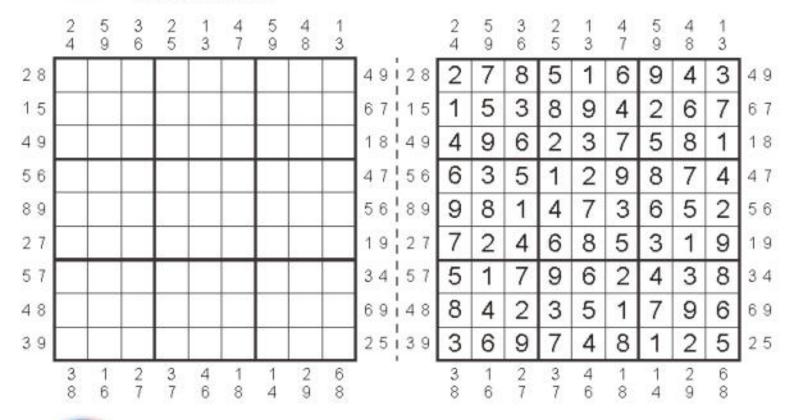
Puzzle 8-23 (Same as Puzzle 11-9 & Finals-9)

Outside Sudoku

Apply classic sudoku rules. The clues outside the grid must appear within the first 3 cells in the corresponding direction.

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

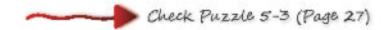|	2 4	5 9	3 6	2 5	1 3	4 7	5 9	4 8	1 3	
2 8	2	7	8	5	1	6	9	4	3	4 9
1 5	1	5	3	8	9	4	2	6	7	6 7
4 9	4	9	6	2	3	7	5	8	1	1 8
5 6	6	3	5	1	2	9	8	7	4	4 7
8 9	9	8	1	4	7	3	6	5	2	5 6
2 7	7	2	4	6	8	5	3	1	9	1 9
5 7	5	1	7	9	6	2	4	3	8	3 4
4 8	8	4	2	3	5	1	7	9	6	6 9
3 9	3	6	9	7	4	8	1	2	5	2 5
	3 8	1 6	2 7	3 7	4 6	1 8	1 4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

Puzzle 8-24 (Same as Puzzle 5-3 & Finals-3)

Arrow Sudoku

Apply classic sudoku rules. Each number placed in the cell with a circle is the sum of the numbers placed along the corresponding arrow passes through. Numbers may repeat on the arrows.

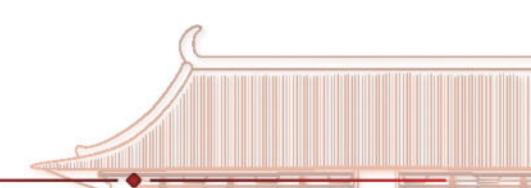# Chang'an City
长安城

Round 9
Team

Sudo-Kurve   1200

Chang'an City (长安城) is the ancient name of the present-day Xi'an in Shaanxi province. It is the city with the most capital dynasties in Chinese history where Chinese civilization, thought, politics, economy, and diplomacy take root. The name Chang'an stands for long-lasting peace and stability and Chang'an City has been known as the best representation of the prosperous age of Chinese civilization. Round 9 is a large-scale Sudoku puzzle based on the intricate connecting passages between Sudoku boxes, showcasing the magnificence of Chang'an City.
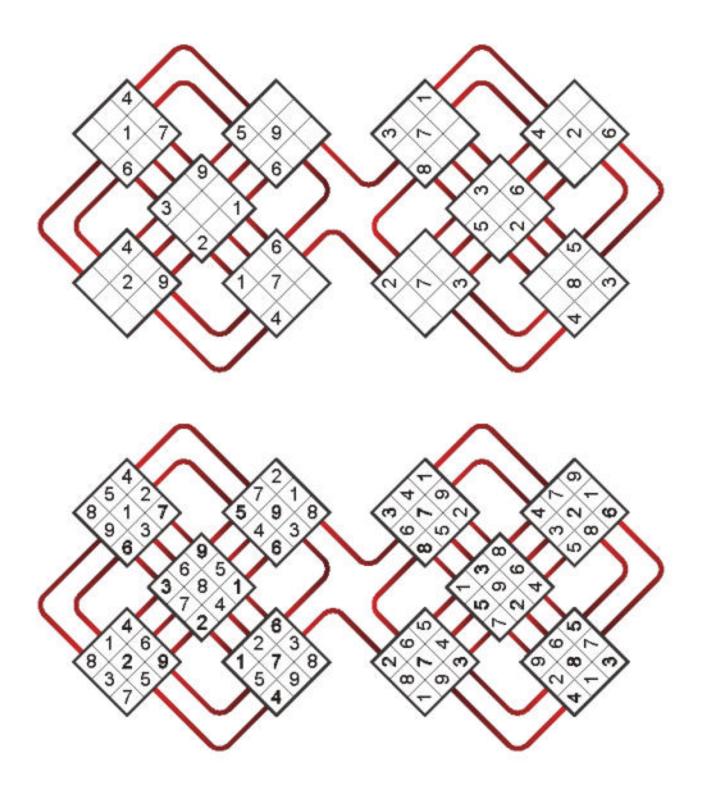
Chang'an City

The puzzle is printed on a piece of A1 paper, and the given numbers in each 3×3 box will face outward. The distinction between the given numbers 6 and 9 will be based on the direction of other numbers in the same 3×3 box. The filled-in numbers are not necessarily consistent with either other filled-in numbers or given numbers. Distinctive written direction is acceptable for full credit as long as the solution is perceptible.
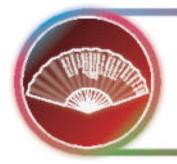
The total score for Round 9 is 1200 points. If the team finishes early and all numbers in the grid are correct, a 40-point bonus will be awarded for each full remaining minute. If the puzzle is not complete or the puzzle is not fully correct, 30 points will be given for each correct 3×3 box. The boxes with wrong numbers will not receive points and will not influence the grading of other boxes.

Competitors in the same team may communicate with each other and change their positions during the competition, but it is not allowed to interfere with other teams.

Sudo-Kurve Rules   The Sudo-Kurve is composed of 40 classic sudoku 3×3 boxes. Fill each empty cell with numbers from 1 to 9 so that each connected group of 9 cells by the pipes and outlined 3×3 box contains 1 to 9 exactly once. There is exactly one solution to this puzzle. The example below is a puzzle with 10 classic sudoku 3×3 boxes.

Hard Roads Toward Shu

蜀道难

Round 10
Individual

October 15th
8:30 AM ~ 9:00 AM

🕐 30 Min
ℹ️ 300 Pts

①	Classic Sudoku	20	⬭
②	Classic Sudoku	20	⬭
③	Classic Sudoku	25	⬭
④	Classic Sudoku	25	⬭
⑤	Classic Sudoku	30	⬭
⑥	Classic Sudoku	30	⬭
⑦	Classic Sudoku	30	⬭
⑧	Classic Sudoku	35	⬭
⑨	Classic Sudoku	40	⬭
⑩	Classic Sudoku	45	⬭

Similar to Round 2, all puzzles in this round are classic sudoku.

◆

Hard Roads Toward Shu (蜀道难) is one of the representative poems by the Tang Dynasty poet Li Bai. Just like the strong contrast between the hard roads described in the poem and the wide expanse of flat land, Round 10 features a set of difficult classic sudoku in stark contrast to the set in Round 2.
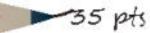
Round 11
Individual

October 15th
9:10 AM ~10:50 AM

100 Min
1000 Pts

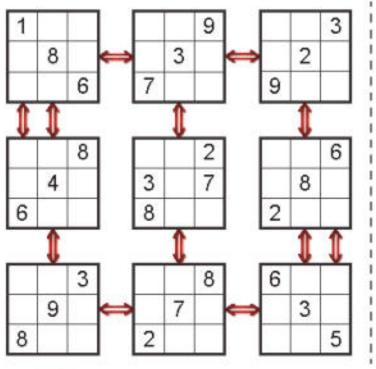|		
①	Bridge Sudoku	35
②	Halved Squares Sudoku	45
③	Pyramid Sudoku	30
④	Numbered Rooms Sudoku	95
⑤	Disjoint Groups Sudoku	55
⑥	Expanded Sudoku	35
⑦	Citywalk Sudoku	40
⑧	Cloned Inequality Sudoku	70
⑨	Outside Sudoku	40
⑩	Rossini Sudoku	50
⑪	Mastermind Sudoku	65
⑫	Even Sandwich Sudoku	70
⑬	Biggest Neighbors Sudoku	80
⑭	Kropki Sudoku	30
⑮	Incomplete Quadruple Sudoku	75
⑯	Brick Wall Sudoku	65
⑰	Blackout 2-Sums Sudoku	85
⑱	Termination Sudoku	35

Complete Library of the Four Treasuries (四库全书) is an accomplished collection of the Qing dynasty imperial library, compiling major literary works produced in China over successive dynasties. As the largest cultural project in ancient China, the collection presents the most systematic and comprehensive summary of Chinese classic culture. As the final individual round in WSC 2024, Round 11 is designed to include a variety of Sudoku puzzles, which is as rich as the diversity of the Four Treasures.
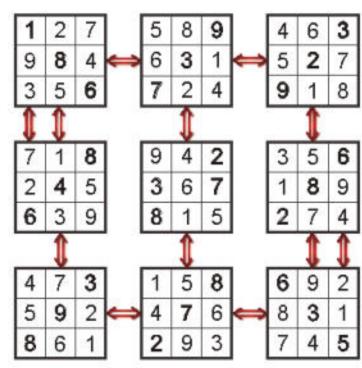
Puzzle 11-1

Bridge Sudoku

35 pts

Apply classic sudoku rules. For pairs of cells that are connected by an external arch bridge outside of the 3×3 box, they contain the numbers with the same parity. There is no restriction on the cells that are not connected by the arch bridge.

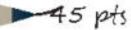
Puzzle 11-2

Halved Squares Sudoku

45 pts

Apply irregular sudoku rules. For cells that are halved by diagonals, place the number in one of its two halved semisquares. The placed number belongs to the corresponding row and column, as well as to the region connected to the halved semisquare where the number lies.
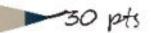

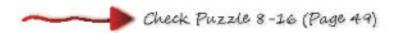**Notes** | *It is not necessary to shade the empty halved squares.*

Puzzle 11-3 (Same as Puzzle 8-16 & Quarterfinals-3)

Pyramid Sudoku

30 pts

Apply classic sudoku rules. Each colored pyramid-shaped region also contains numbers 1 to 9 exactly once.

Puzzle 11-4

Numbered Rooms Sudoku

95 pts

Apply classic sudoku rules. Each clue outside the grid indicates the number that is placed in the Nth cell in the corresponding direction, where N is the number placed in the 1st cell in that direction.

Left grid (clues):

Top: 2 9 3 | 3 4 5 | 1 3 1

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

Bottom: 2 4 4 | 1 6 6 | 7 4 4

Right grid (solution):

Top: 2 9 3 | 3 4 5 | 1 3 1

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

Bottom: 2 4 4 | 1 6 6 | 7 4 4

Puzzle 11-5 (Same as Puzzle 8-18)

Disjoint Groups Sudoku

55 pts

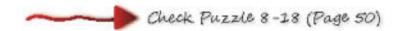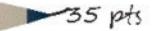Apply classic sudoku rules. Cells that appear in the same relative position in the nine 3×3 boxes also contain 1 to 9 exactly once.
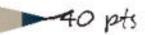
Puzzle 11-6

Expanded Sudoku

35 pts

Apply classic sudoku rules. In addition, rows and columns continue over the two empty spaces.

Puzzle 11-7

Citywalk Sudoku

40 pts

Consider each cell as a zone in the city, while the number in the cells denotes the comfort indicator for people meandering inside the zone. Research indicates that the area with comfort indicators 3 to 7 would be ideal for visitors to walk in.

Apply classic sudoku rules. In addition, all cells that contain 3 to 7 are orthogonally connected in the grid. There is no restriction on connectivity in each 3×3 box.

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

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

Notes *It is not necessary to draw the orthogonally connected Citywalk passage.*

Puzzle 11-8

Cloned Inequality Sudoku

70 pts

Apply classic sudoku rules. There are some cloned shaded regions that share the same shape without rotating or reflecting. The inequality relationship between each pair of numbers in orthogonally connected cells in one region must be identical to the inequality relationship in the same relative position in all other cloned regions that have the same shape.

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

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

Puzzle 11-9 (Same as Puzzle 8-23 & Finals-9)

Outside Sudoku — 40 pts

Apply classic sudoku rules. The clues outside the grid must appear within the first 3 cells in the corresponding direction.

Puzzle 11-10 (Same as Puzzle 8-8 & Finals-2)

Rossini Sudoku — 50 pts

Apply classic sudoku rules. The arrows outside the grid indicate either the ascending or descending order of the first 3 numbers (the largest number is located in the direction that the arrow points to). If there is no arrow outside, then the first 3 numbers are neither in ascending nor descending order.

Puzzle 11-11

Mastermind Sudoku — 65 pts

Apply classic sudoku rules. The colored central box is the exemplar for comparison. The clues outside the grid (●, ○, or X) are given in the style of a Mastermind puzzle for comparison of the first 3 numbers in their corresponding direction in the 1st, 3rd, 7th, and 9th boxes to the 3 numbers in the same relative position in the 5th box:

● is given for every identical number that appears in the same relative position. ○ is given for every identical number that appears but not in the same relative position. X denotes that there is no identical number. Multiple dots can appear for each comparison.
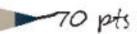
Puzzle 11-12 (Same as Puzzle Finals-6)

Even Sandwich Sudoku — 70 pts

Apply classic sudoku rules. The numbered clues outside the grid indicate all numbers that have two even numbers as the immediate orthogonal neighbors in the corresponding row or column (the numbers on the margin would never appear as the clue). The clued cross mark "X" indicates that both immediate neighbors of each number in that row or column must not be even. The clues are not necessarily given in order.

Left grid (puzzle):

	9	34	15	X	9	5	17	1	7
89		5						9	
1	4								3
9			8		3		7		
26				8		6			
56			2				1		
8				7		1			
46			4		8		3		
X	6								8
9		8					2		

Right grid (solution):

	9	34	15	X	9	5	17	1	7
89	7	5	3	1	6	8	2	9	4
1	4	1	6	9	7	2	8	5	3
9	2	9	8	4	3	5	7	6	1
26	9	7	1	8	2	6	4	3	5
56	8	6	2	5	4	3	1	7	9
8	3	4	5	7	9	1	6	8	2
46	5	2	4	6	8	9	3	1	7
X	6	3	9	2	1	7	5	4	8
9	1	8	7	3	5	4	9	2	6

Puzzle 11-13

Biggest Neighbors Sudoku — 80 pts

Apply classic sudoku rules. The arrows inside each cell point to all the biggest numbers in its four orthogonally adjacent cells.

Left grid (puzzle):

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

Right grid (solution):

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

Puzzle 11-14 (Same as Puzzle 8-4)

Kropki Sudoku

30 pts

Apply classic sudoku rules. Adjacent cells containing numbers that differ by 1 are marked with a white dot. Adjacent cells containing numbers with a ratio of 2 are marked with a black dot. Adjacent cells containing 1 and 2 can be marked by either a black or a white dot. All dots that satisfy the above condition have been given.

Puzzle 11-15

Incomplete Quadruple Sudoku

75 pts

Apply classic sudoku rules. Some clued numbers are given at intersections of two crossing grid lines, where those numbers must be placed in the 4 adjacent cells.

Puzzle 11-16

Brick Wall Sudoku

65 pts

Fill each empty cell with numbers from 1 to 9 so that each row and column contains 1 to 9 exactly once. Each brick indicates the index of a two-digit number (reading left to right) or a one-digit number within that brick without repetition. The index is ordered from the smallest number (with index 1) to the largest number (with index 45) ascendingly.

Puzzle 11-17

Blackout 2-Sums Sudoku

85 pts

Fill each empty cell with either numbers from 1 to 9 or a blackout cell so that each row, column, and outlined 3×3 box contains distinct numbers and exactly one blackout cell. In addition, the clues outside the grid indicate the sum of the first 2 numbers placed in the corresponding direction.

| Notes | Black cells can be marked in any way except numbers from 1–9, but the marking must be uniform. |

Puzzle 11-28

Termination Sudoku

35 pts

Apply classic sudoku rules. When two adjacent cells contain numbers where the sum or the product of two numbers ends in digit 0, a marked "0" is placed between the two cells. All marked "0" that satisfy the above condition have been given.

e.g. $2\,8 \Rightarrow 10 = 2 + 8$ ✓ $4\,5 \Rightarrow 20 = 4 \times 5$ ✓

Interlocked Stratagems
连环计

Round 12
Team

① Irregular Sudoku *(Mutual Exclusive)*   300
② Skyscraper Sudoku *(Mutual Exclusive)*   300
③ Killer Sudoku *(Mutual Exclusive)*   300
④ Anti-Knight Sudoku *(Mutual Exclusive)* 300

The Chinese idiom **Interlocked Stratagems** (连环计) is a strategy that originated from the ancient Chinese military book "Thirty-Six Strategies". It comes from the story of The Battle of Red Cliffs in the Three Kingdoms period (220 – 280 AD), meaning that several strategies are interlocked one after the other. Round 12 features a set of interlocked sudoku, which requires the simultaneous consideration of 4 Sudoku variant rules in the solving process.

Interlocked Stratagems

Round 12 consists of 4 Sudoku puzzles with Irregular Sudoku rules, Skyscraper Sudoku rules, Killer Sudoku rules, and Anti-Knight Sudoku rules respectively. In addition, cells that appear in the same relative grid position in the 4 puzzles must be different. There is exactly one solution that fulfills both the mutual exclusive rule and the regular Sudoku variant rules for the 4 puzzles.

The total score for Round 12 is 1200 points. If the team finishes early and all 4 puzzle solutions are correct, a 40-point bonus will be awarded for each full remaining minute. If one or more puzzles are not complete or fully correct, 300 points will be given for each correct puzzle.

For each incomplete puzzle, the largest perceptible number in the cell will be regarded as the filled-in number. The number must take up more than half of the cell for grading. If only small numbers appear in a cell, the cell will be regarded as an empty cell.

When all filled-in numbers in the incomplete solution are correct, 3 points will be given for each correct number. Puzzles with incorrect numbers will receive a score of 0. Competitors in the same team may communicate with each other and change their positions during the competition, but it is not allowed to interfere with other teams.

Puzzle 12-1

Irregular Sudoku *(Mutual Exclusive)*

300 pts

Fill each empty cell with numbers from 1 to 9 so that each row, column, and outlined 9-cell region contains each number exactly once.

Puzzle 12-2

Skyscraper Sudoku *(Mutual Exclusive)*

300 pts

Apply classic sudoku rules. The number in each cell represents the height of a building, and the clues outside the grid indicate the number of buildings visible in the direction seen from the position of the clues. Taller buildings will block the view of any shorter buildings behind them.

Puzzle 12-3

Killer Sudoku *(Mutual Exclusive)*

300 pts

Apply classic sudoku rules. The numbered clues in each cage are the sum of all numbers in the corresponding cage, while numbers must not repeat within the same cage.

Puzzle 12-4

Anti-Knight Sudoku *(Mutual Exclusive)*

300 pts

Apply classic sudoku rules. Numbers placed in a pair of cells that are linked by a chess Knight's move must be different.

〇〇 Example 〇〇

Irregular Sudoku (Mutual Exclusive)

Skyscraper Sudoku (Mutual Exclusive)

Skyscraper outside clues —
Top: 4 3 2 4 2 4 2 1 2
Right: 2 4 2 3 1 5 4 2 2
Bottom: 3 4 4 6 4 1 2 3 2
Left: 8 3 3 4 3 2 1 2 3

Killer Sudoku (Mutual Exclusive)

Anti-Knight Sudoku (Mutual Exclusive)

Solution

Irregular Sudoku (Mutual Exclusive)

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

Skyscraper Sudoku (Mutual Exclusive)

Top clues: 4 3 2 4 2 4 2 1 2

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

Left clues: 8 3 3 4 3 2 1 2 3
Right clues: 2 4 2 3 1 5 4 2 2
Bottom clues: 3 4 4 6 4 1 2 3 2

Killer Sudoku (Mutual Exclusive)

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

Anti-Knight Sudoku (Mutual Exclusive)

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

Hundred Schools of Thought
诸子百家

Round 13
Team

October 15th
12:00 PM ~ 12:30 PM

🕐 30 Min
ℹ 1200 Pts

① Non-Consecutive Sudoku *(Diagonal)*   300 ⬭
② No Three in a Row Sudoku *(Diagonal)*   300 ⬭
③ Windoku *(Diagonal)*   300 ⬭
④ Anti-Knight Sudoku *(Diagonal)*   300 ⬭

Hundred Schools of Thought (诸子百家) is a general term for the flourishing academic schools in the pre-Qin Dynasty period. With over 4,000 works from more than 100 academic schools, it shows the cultural atmosphere of a hundred schools of thought from 500 to 221 BC. Confucianism, Legalism, and Taoism are some of the most popular schools. They have guided the development of China and even neighboring countries in various fields from different perspectives. As the final team round of WSC 2024, Round 13 features bamboo slips, which used to be a core medium to store and popularize these academic thoughts before the invention of paper.

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

⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱
8	7	9	4	2	3	6	8	2
7	8	2	9	9	4	1	2	5
2	5	7	7	4	9	3	5	8
4	9	6	1	3	1	8	9	4
5	2	1	3	7	6	4	7	9
9	1	3	6	6	7	5	4	7
6	3	8	2	1	5	2	6	1
1	4	5	5	8	2	9	1	3
3	6	4	8	5	8	7	3	6

Non-Consecutive Sudoku (Diagonal)

No Three in a Row Sudoku (Diagonal)

Hundred Schools of Thought

Round 13 consists of 4 sets of empty bamboo slips with the corresponding puzzle type and 36 Sudoku column stickers. Each Sudoku column sticker has 9 cells, and there may be empty cells on the sticker. Competitors need to divide those 36 Sudoku column stickers into four groups and arrange them onto the set of empty bamboo slips to comply with the puzzle rules that correspond to the set: Non-Consecutive Sudoku rules with diagonal constraints, No Three in a Row udoku rules with diagonal constraints, Windoku rules with diagonal constraints (except that there is no colored region shown on the stickers), and Anti-Knight Sudoku rules with diagonal constraints.

All 4 puzzle-type column stickers must also be put on either the left or the right of the corresponding solution on each set of bamboo slips. Each team is given two sets of the same Sudoku column stickers. If there is any need to change the previous solution, the previous stickers can be overwritten. There are only two symmetric solutions for each puzzle, and both solutions are considered as correct.

The total score for Round 13 is 1200 points. If the team finishes early and all 4 sets (solutions with puzzle types) are correct, a 20-point bonus will be awarded for each full remaining minute. If one or more sets are not complete or fully correct, 300 points will be given for each correct set. There is no partial credit for sets with incomplete or incorrect solutions, and unmatched or missing puzzle-type stickers. Competitors in the same team may communicate with each other and change their positions during the competition, but it is not allowed to interfere with other teams.

An example of 18 Sudoku column stickers with 2 puzzle-type column stickers is provided on the left. A real set of empty bamboo slips will be shown during the Q&A session.

Puzzle 13-1

Non-Consecutive Sudoku *(Diagonal)*

300 pts

Apply classic sudoku rules. Numbers placed in adjacent cells must not be consecutive.

In addition, the two diagonals of the grid also contain 1 to 9 exactly once.

Puzzle 13-2

No Three in a Row Sudoku *(Diagonal)*

300 pts

Apply classic sudoku rules. Numbers in any three consecutive cells in each row or column must not have the same parity.

In addition, the two diagonals of the grid also contain 1 to 9 exactly once.

Puzzle 13-3

Windoku *(Diagonal)*

300 pts

Apply classic sudoku rules. All 4 shaded square regions also contain numbers from 1 to 9 exactly once.

In addition, the two diagonals of the grid also contain 1 to 9 exactly once.

Puzzle 13-4

Anti-Knight Sudoku *(Diagonal)*

300 pts

Apply classic sudoku rules. Numbers placed in a pair of cells that are linked by a chess Knight's move must be different.

In addition, the two diagonals of the grid also contain 1 to 9 exactly once.

Solution Example

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

Non-Consecutive Sudoku (Diagonal)

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

No Three in a Row Sudoku (Diagonal)

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

Windoku (Diagonal)

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

Anti-Knight Sudoku (Diagonal)

Notes | *In the competition, neither bamboo slips nor stickers include any 3×3 box, diagonal, and Windoku regions.*

THE
2024
17th SUDOKU
&31st PUZZLE
WORLD
CHAMPIONSHIP

Quarterfinals
⏱ **20 Min**

1. Classic Sudoku
2. Anti-Knight Sudoku
3. Pyramid Sudoku
4. Thermometers Sudoku
5. XV Sudoku
6. Killer Sudoku

Semifinals
⏱ **20 Min**

1. Classic Sudoku
2. Extra Regions Sudoku
3. Odd / Even Sudoku
4. Quadruple Sudoku
5. Clone Sudoku
6. Irregular Sudoku

Finals
⏱ **45 Min**

1. Classic Sudoku *(Easy)*
2. Rossini Sudoku
3. Arrow Sudoku
4. Ratio Sudoku
5. Consecutive Sudoku
6. Even Sandwich Sudoku
7. Fortress Sudoku
8. Classic Sudoku *(Medium)*
9. Outside Sudoku

Quarterfinals Puzzle-4

Thermometers Sudoku

Apply classic sudoku rules. Each thermometer forms a sequence of strictly increasing numbers placed along the cells starting from the bulb.

	1				7	
		6				5
9						

(unsolved grid and solved grid shown)

Solved grid (right):

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

For other puzzle rules and examples, please refer to previous rounds.