

LMI SUDOKU TEST 7x7

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The first logic puzzle that I ever designed was a scattered number place puzzle of size 7x7. I was inspired by a puzzle from the USPC, around ten years ago. Ever since, I still like the smaller sized sudokus, although they are not published very often. Therefore I decided to make a whole sudoku test for LMI with only sudokus of this smaller size. But be warned: Smaller doesn't always mean easier! ☺

What you need to know

- This test consists of 4 basic types of size 7x7: Chaos (C), Scattered (S), Double Scattered (DS) and Toroidal (T). The instructions of the basic types are written on the first puzzle page.
- Each variant has a letter in brackets (C,S,DS,T) to indicate the basic type that has to be used.
- The duration of the test is 100 minutes;
- The distribution of points is based on the times needed by test solvers. Therefore, you might experience differences due to your own personal skills and preferences; The difficulty of Sudokus in the IB is not representative for the difficulty of the Sudoku in the real test.
- Each Sudoku has two marked rows/ columns or a combination as solution code.
- The puzzle booklet will contain 5 pages, without cover page and points table;
- This test uses **instant grading** where a solver can submit any individual puzzle once finished and receive confirmation that the solution is correct or not. Each incorrect submission reduces the puzzle's potential score. The first, second, third, and fourth incorrect submission reduces the potential score to 90%, 70%, 40%, and 0% respectively. (Afterwards, the puzzle's potential score remains 0%.)
- If you submitted all solutions correct you can have bonus points. Your final score is then calculated using the formula: Final Score = Total Points / Used Time * 100 minutes.

Many thanks go to Florian Kirch, Hans Eendebak, Karin Griffioen, René Gilhuijs, Robert Beärda and Wilbert Zwart for test solving and to LMI for hosting this test.

Good Luck and have fun!

Points table		
Basic		
1	Chaos	25
2	Toroidal	30
3	Scattered	45
4	Double Scattered	30
Dots		
5	Quad Sums (S)	60
6	Toroidal Kropki (T)	35
7	Consecutive (DS)	50
8	OddMax (S)	65
Lines and Arrows		
9	Point to Next (DS)	50
10	Palindrome (C)	50
11	Diagonal (C)	55
12	Arrow (S)	55
Shapes and Cages		
13	Equal (S)	40
14	Consecutive Circles(C)	70
15	Killer (C)	65
16	Thermometer (T)	35
Shades of Grey		
17	Fortress (C)	50
18	Low (T)	75
19	All Odd/Even (T)	55
20	Sum 100 (C)	60
	TOTAL	1000

1. CHAOS – 25 POINTS

Place the digits from 1 to 7 in every row, every column and every bold outlined area.

7				1		
3				2		
4			3			7
		4				5
		5				2

SOLUTION

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

2. TOROIDAL – 30 POINTS

Place the digits from 1 to 7 in every row, column and bold outlined area. Some outlined areas wrap around the grid from top to bottom and/ or from left to right.

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

SOLUTION

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

3. SCATTERED – 45 POINTS

Place the digits from 1 to 7 in every row, every column, every bold outlined area and the seven grey cells.

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

SOLUTION

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

4. DOUBLE SCATTERED – 30 POINTS

Place the digits from 1 to 7 in every row, every column, every bold outlined area and twice in the fourteen grey cells.

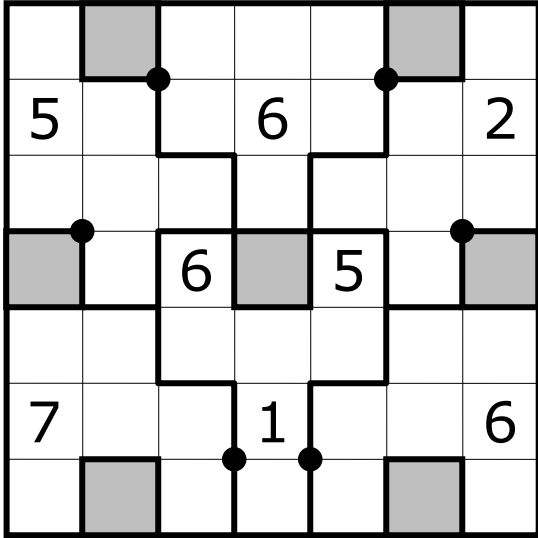
	7	1			5	
	6			4		
			3			
		2			1	
	1			6	3	

SOLUTION

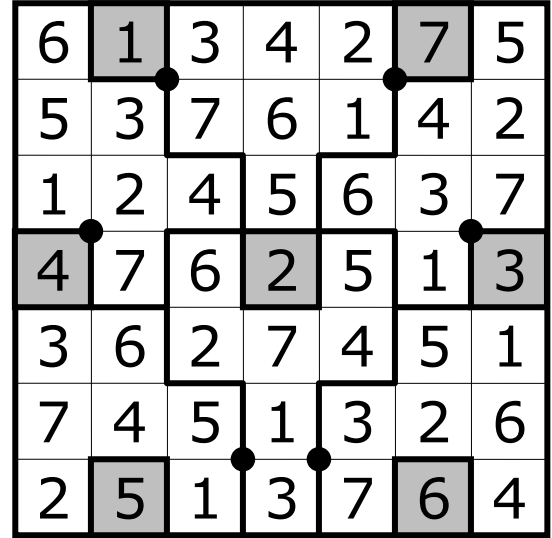
1	2	5	4	7	6	3
4	7	1	6	3	5	2
3	6	7	5	4	2	1
2	5	6	3	1	4	7
6	3	2	7	5	1	4
7	1	4	2	6	3	5
5	4	3	1	2	7	6

5. QUADSUMS (S) – 60 POINTS

A circle at a corner implies that one digit is the sum of the remaining three digits at that corner.

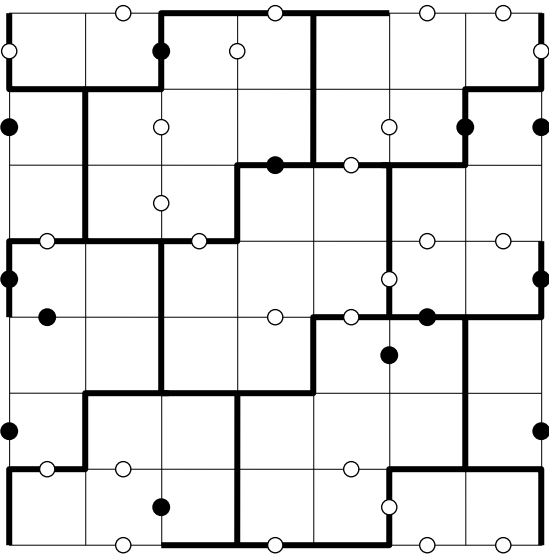


SOLUTION

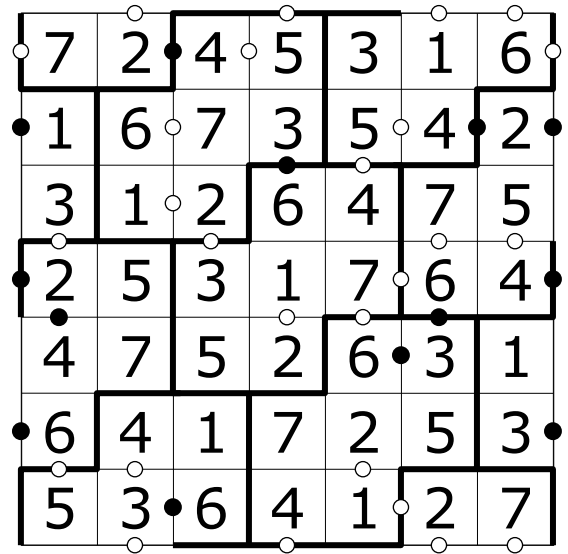


6. TOROIDAL KROPKI (T) – 35 POINTS

A black dot means: one of the neighboring digits has the double value of the other. A white dot means: the difference of the neighboring digits is exactly one. No dot means that none of the constraints is valid.

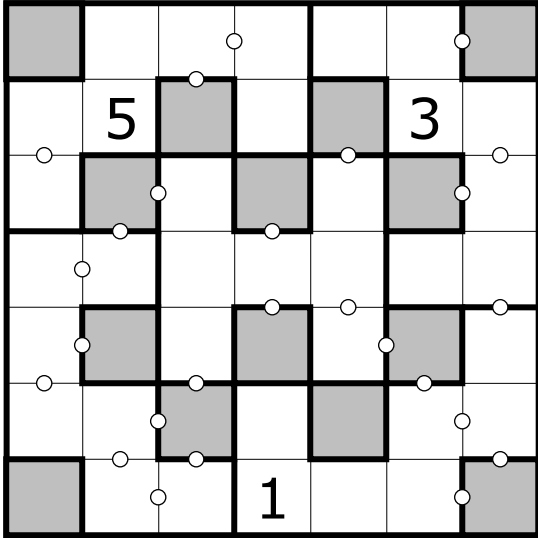


SOLUTION

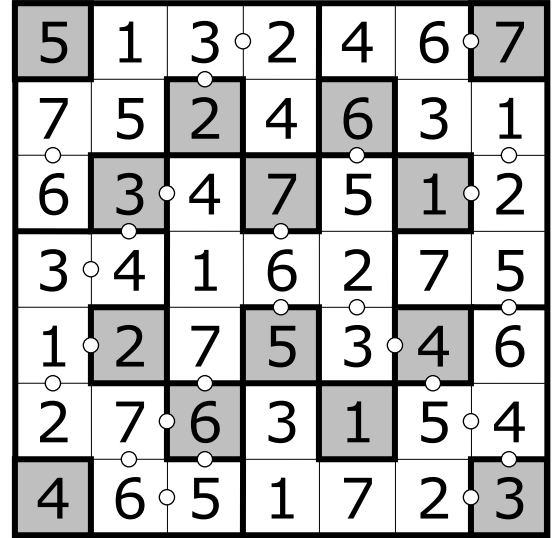


7. CONSECUTIVE (DS) – X POINTS

In all cases where two neighbouring cells contain consecutive digits, a circle is placed between those cells.

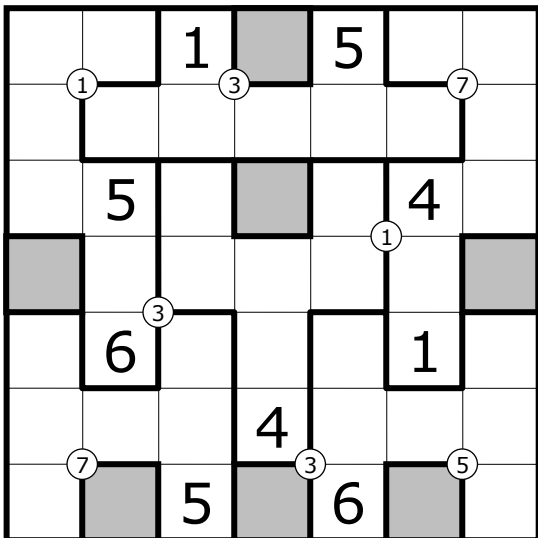


SOLUTION

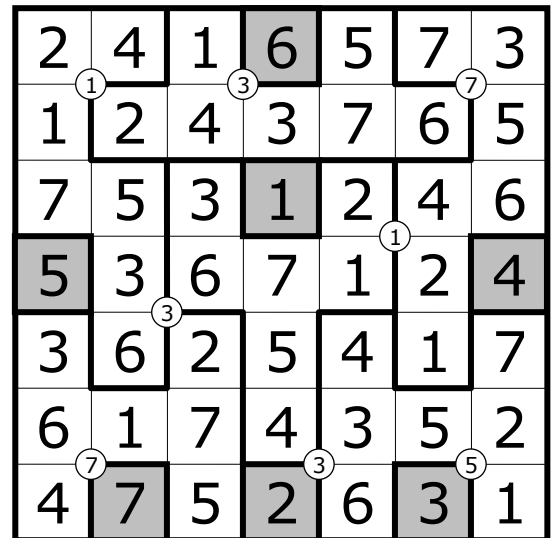


8. ODDMAX (S) – 65 POINTS

A digit in a circle appears exactly one time in the four surrounding cells and it is the highest odd digit in those four cells.



SOLUTION



9. POINT TO NEXT (DS) – 50 POINTS

If a cell with an arrow contains digit 'N', 'N+1' must be placed in one of the cells pointed by the arrow.

			1		6	
		←				
	↑		→		3	
3		↓		←		
			↑		↓	5
1		2		→	7	
				6		

SOLUTION

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

10. PALINDROME (C) – 50 POINTS

The numbers on each grey line form a palindromic sequence from one end to the other end.

6					1	
					2	3
			5			
4	5					
	6					1

SOLUTION

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

11. DIAGONAL (C) – 55 POINTS

Both diagonals contain the digits from 1 to 7.

3		2		6		1
	4				1	
6		1		7		4

SOLUTION

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

12. ARROW (S) – 55 POINTS

The digit in the point of an arrow equals the sum of the other digits in the same arrow.

					7	
			3			
		5		7		
			1			
	5					

SOLUTION

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

13. EQUAL (S) – 40 POINTS

In all dotted cages the sum of the odd digits equals the sum of the even digit(s). Digits do not repeat in a dotted cage.

	6				2	
		6	3	2		

SOLUTION

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

14. CONSECUTIVE CIRCLES (C) – 70 POINTS

Digits on the grey circles are all different and they form a strictly increasing sequence with differences of 1. The order of any sequence can be clockwise or anticlockwise.

○		6		○	
		1			
5	1			4	2
○		2		○	
		5			

SOLUTION

1	2	3	6	5	7	4
4	3	2	1	7	6	5
6	5	7	4	1	2	3
5	1	6	7	3	4	2
2	4	1	3	6	5	7
3	○	7	5	2	4	○
7	6	4	5	2	3	1

15. KILLER (C) – 65 POINTS

The sum of digits inside each dotted cage is given at the upper left cell of the cage. Digits may not repeat within a cage.

11		14			18	
	11			5	11	
12		18				10
			13			
	7			17		
17	5		16		11	

SOLUTION

11	4	2	3	6	1	5	7			
	5	3	1	4	5	2	7	6		
12	1	7	6	5	3	4	10	2		
	2	6	7	13	1	5	3	4		
	3	7	5	2	7	17	4	6	1	
17	6	5	1	4	16	3	7	11	2	5
	7	4	5	2	6	1	3			

16. THERMOMETER (T) – 35 POINTS

The digits in each thermometer-shaped region should be in increasing order, from the bulb to the end.

4						
					5	
			3			
	5					
						5

SOLUTION

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

17. FORTRESS (C) – 50 POINTS

There is a fortress in the grid formed by grey cells. The digits in grey cells have to be greater than the digits in horizontally or vertically adjacent white cells.

		5				
			3			
6						
	4				2	
						1
			5			
				1		

SOLUTION

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

18. LOW (T) – 75 POINTS

In every bold outlined area the lowest digits have to be written in the grey cells.

	4					
6		2		3		4
					6	

SOLUTION

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

19. ALL ODD/EVEN (T) – 55 POINTS

In every bold outlined area the grey cells contain either all odd or all even digits.

3						4
	4				1	
4				2		
			7			
		3				1
	6				7	
7						2

SOLUTION

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

20. SUM 100 (C) – 60 POINTS

In each row, the sum of number combinations in the grey cells is exactly 100.

1						
	2					
		3		5		
		4				
					6	

SOLUTION

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