

RUSSIAN SUDOKU CHAMPIONSHIP

07.02.2010
INSTRUCTIONS



1-6. SUDOKU CUBE

Solve six sudokus using standard rules: each row, column and outlined 2x3 area should have each digit from 1 to 6 exactly once. Digits occupied the same cells (for example the top left corner) should be different in these six grids.

		6			
					6
			3		
			6	2	

		2			
				6	

				4	
		6			2
					3

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

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

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

6		1			
	4				
	5				
6					
4					

					1
		3			
	2			3	
1					
5					

1	3				
4					
	2	6			
4	1				

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

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

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

Answer format: Write the content of two main diagonals – first from top left corner to bottom right, then from bottom left to top right.

Score: 40 points for the first solved puzzle (there may be any grid) and 10 points for each next.

7-12. SUDOKU SUM-DIFFERENCE

Fill in the grid using standard sudoku rules: each row, column and outlined 3x3 square should have each digit from 1 to 9 exactly once. Dots between cells show all pairs of digits which sum or difference is equal to the fixed value (each grid has each own value: 3, 4, 5, 6, 7, 8).

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

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

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

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

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

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

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

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

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

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

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

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

Answer format: Write the content of two main diagonals – first from top left corner to bottom right, then from bottom left to top right.

Score: 25 points for each puzzle.

13. OPTIMIZATION

Find cell chains (more than one) in the grid which contain the same digits sequence. Chains can touch (itself and each other) even by the side but cannot intersect. Maximize the number of cells which belong to the chains.

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

Example:

Three chains of 6 cells each: 6-2-4-8-6-3, total 18 cells.
Score: $3 \times (18 - 10) = 24$ points

Answer format: Write the number of chains and digits for them. For the example the answer would be 3x368426
Score: 3 points for each cell over 10.

14-19. MATCH MAKER

Fill in the grid using standard sudoku rules: each row, column and outlined 3x3 square should have each digit from 1 to 9 exactly once. Each of six puzzles has one additional rule. You should determine the rule corresponded for the puzzle. Each rule is used only for one puzzle. The rules:

1. Sudoku with diagonals.

Both main diagonals should have different digits.

2. Sudoku "Two stars".

Both stars (see the picture) should have different digits.

3. No touching sudoku.

Cells with the same digits could not touch even diagonally.

4. Knight sudoku.

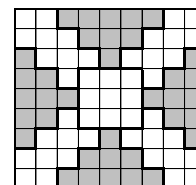
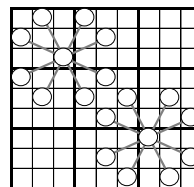
Cells connected with a chess-knight move could not contain the same digits.

5. Sudoku with irregular areas.

The grid should satisfy sudoku rules for irregular areas (see the picture) as well as for square areas.

6. No consecutive sudoku.

Cells with consecutive digits (two digits differ by 1) could not touch by the side.



A

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

B

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

A NO CONSECUTIVE

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

B WITH DIAGONALS

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

C

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

D

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

C TWO STARS

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

D NO TOUCHING

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

E

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

F

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

E KNIGHT

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

F IRREGULAR AREAS

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

- With diagonals
- Two stars
- No touching
- Knight
- Irregular areas
- No consecutive

A	B	C	D	E	F

- With diagonals
- Two stars
- No touching
- Knight
- Irregular areas
- No consecutive

A	B	C	D	E	F
X					
		X			
			X		
				X	
					X
X					

Answer format: Write the content of two main diagonals – first from top left corner to bottom right, then from bottom left to top right.

Score: 40 points for each puzzle.