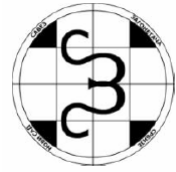
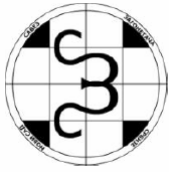


# 4th Open Serbian Optimizing Puzzle Championship

3. December - 16. december 2011.

<http://puzzleserbia.com/>



## FIRST WEEK

(3.12. - 10.12.)

1. INTERESTING MATHEMATICS
2. DOMINOES CHESS
3. HOUSE IN A FIELD OF FLOWERS
4. SUDOKU PARQUET
5. RECYCLING

**Solutions should be sent through a special form available at the following address:**

<https://docs.google.com/spreadsheet/viewform?hl=sr&formkey=dFEtVWE0Y18zeEkydy1pRDBmRm5ISIE6MQ#gid=0>

**The deadline for sending the solution is 10.12. (Saturday) 24:00.**

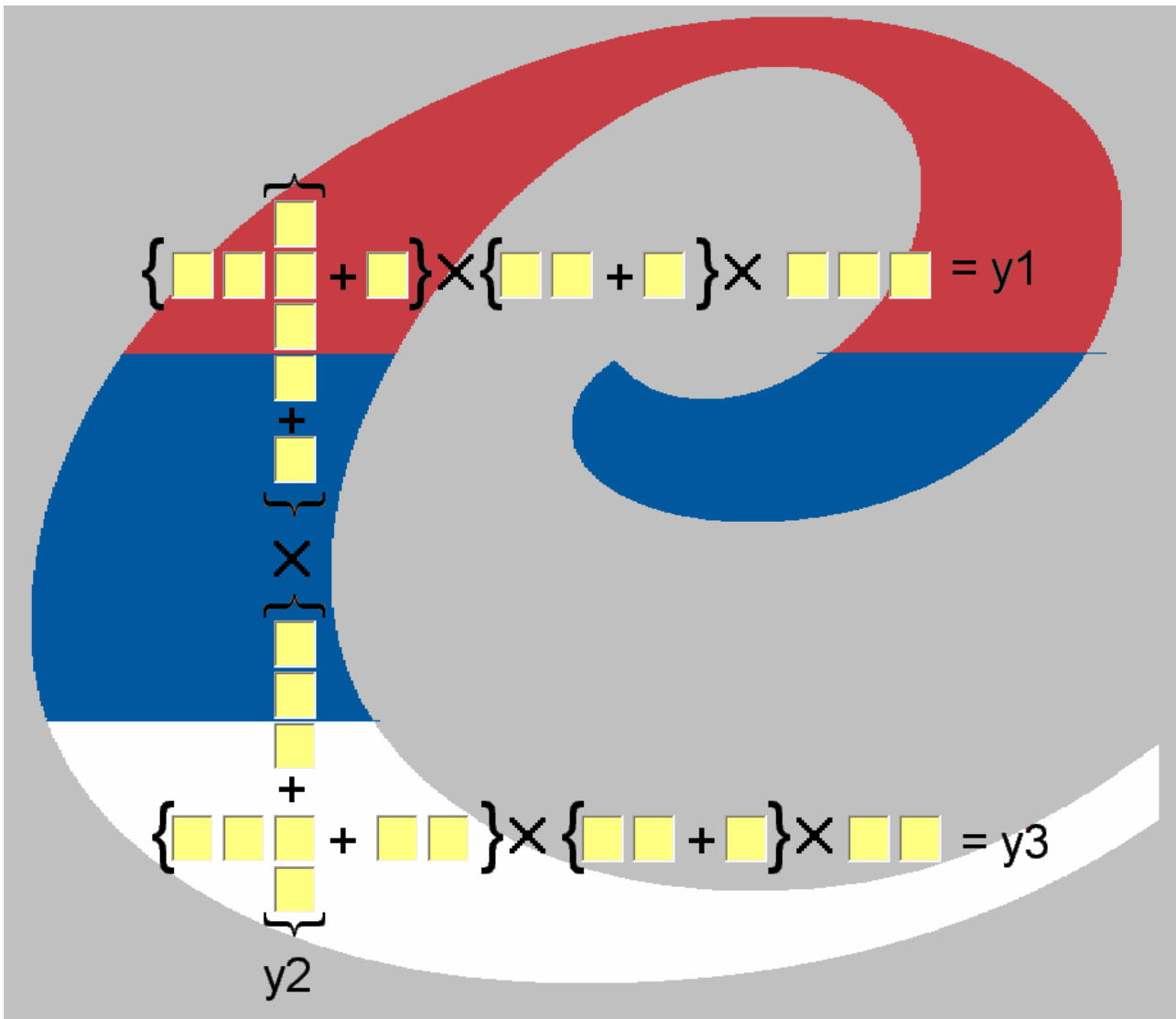
Day after deadline for set, all received solutions will be available. Scoring table will be ready within 48h, and next 48h any complains will be considered - author's decision will be final. After second week, final results will be published and winners declared.

In every puzzle best result gives 25 points, second 21, third 18, and then 16, 14, 12, 10, 9, 8, 7, 6, 5, 4, 3, 2 and 1 point. The winner is the contestant with the most points. If two competitors have same amount of points, one with more solutions with 25 points will get higher rank. If that is same we will look for solutions that gives 21, 18... points. If everything is identical, the solutions receiving time will be considered.

In finding solutions, or parts of the solution, you may not use the suggestion from any side, including computer programs. The programs can be used only to calculate result for your solution. For some puzzles we will provide that kind of programs (Delphi for Windows). Lovers of programming are invited to participate in the subsequent analysis.

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# 1. INTERESTING MATHEMATICS



Put numbers 0-9 in squares so that in each of the three equations (Y1, Y2 and Y3) each digit appears exactly once. Zero can not stand at the beginning of number (most significant digit).

**Scoring:** The result is the sum  $y1+y2+y3$ . **Maximize your score.**

**Example:**  $y1 = (123 + 4) * (56 + 7) * 890$   
 $y2 = (1324 + 5) * (678 + 90)$   
 $y3 = (129 + 34) * (56 + 7) * 80$       Score = 8963082

**Solution format:** First line - your score, next 3 lines - the digits in order entered in  $y1$ ,  $y2$  i  $y3$ .

For the given example solution should look like this:

```
8963082
1234567890
1324567890
1293456780
```

## 2. DOMINOES CHESS

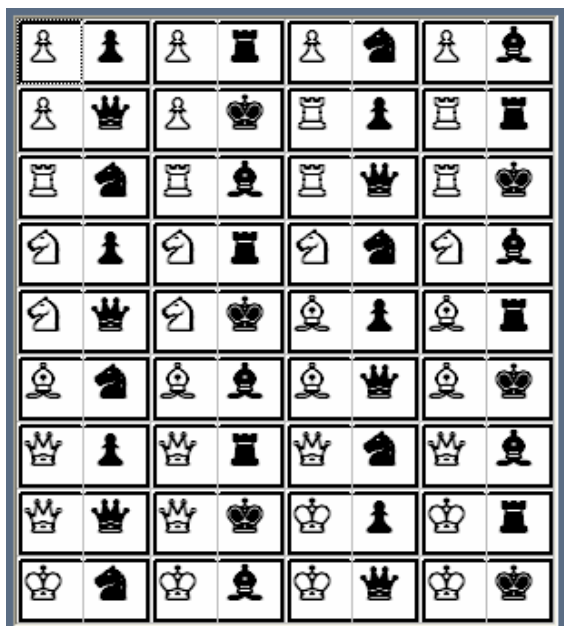
Put on 9x8 board set of dominoes made from all the combinations of differently colored chess pieces, without overlapping. Dominoes can be placed horizontally or vertically.

**Scoring:** For every piece on the board you get the point for each of the affected piece of another color. Rooks, bishops and Queens attack all pieces in the line until it encounters the figure of the same color as theirs. As usual, white pawns attack on the up and the black to down. The result is the sum of all points of all pieces on the board. **Maximize your score.**

**Example:** (The right table show points for every piece in the same position on the left table)

	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	9	1	3	2	3	3	2	3	7
	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	8	2	1	1	5	4	6	1	0
	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	7	0	2	4	2	7	0	0	2
	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	6	1	4	5	2	5	2	3	2
	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	5	1	6	4	5	4	2	5	0
	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	4	2	9	1	1	7	5	0	3
	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	3	5	2	3	11	2	3	0	3
	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	2	2	6	5	1	2	0	4	3
	♙	♚	♘	♖	♗	♕	♛	♜	♞	♝	♟	♠	♡	♣	♤	♥	♦	♧	♨	1	0	0	1	3	3	5	3	0
	A	B	C	D	E	F	G	H											207									

**Solution format:** First line - your score, next lines - position of each figure according to next image:

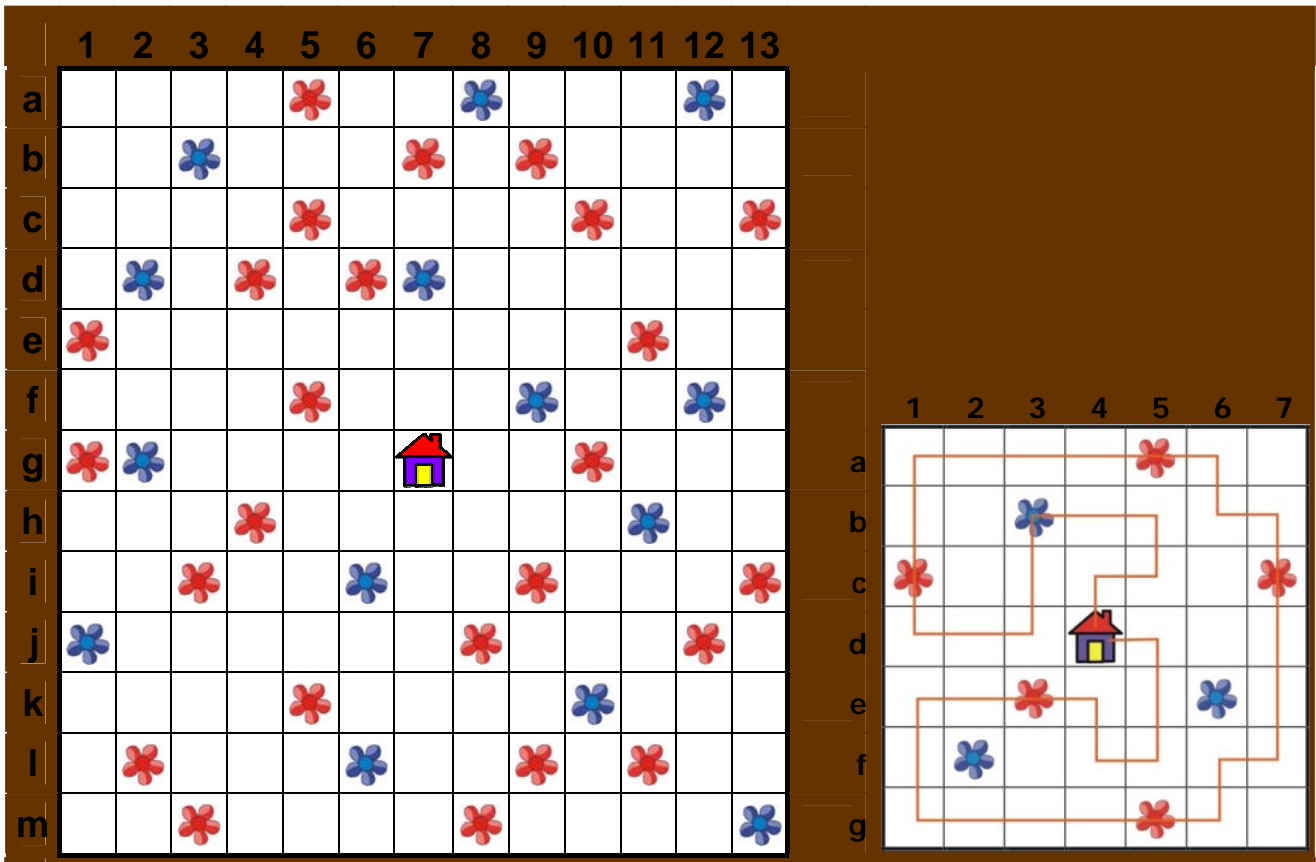


For the given example solution should look like this:

207  
 G8G7, A7B7, C8C9, C1B1,  
 A1A2, G3H3, C5C4, D6D7,  
 E8E9, A4A3, .....

### 3. HOUSE IN A FIELD OF FLOWERS

(Masyu variation)



Start from home, connect centers of adjacent fields, pass through the garden and try to collect as many flowers as you can, and return to the house. On the blue flower you have to make turn, but in the fields before and after the blue flower you can not change direction. Over the red flower you can not change direction, but immediately before and / or after you have to make turn. Each field can be used only once.

**Scoring:** Every step on empty field brings 1 point, each picked red flower is worth 3, and each blue flower 4 points. Field with house does not count. **Maximize your score.**

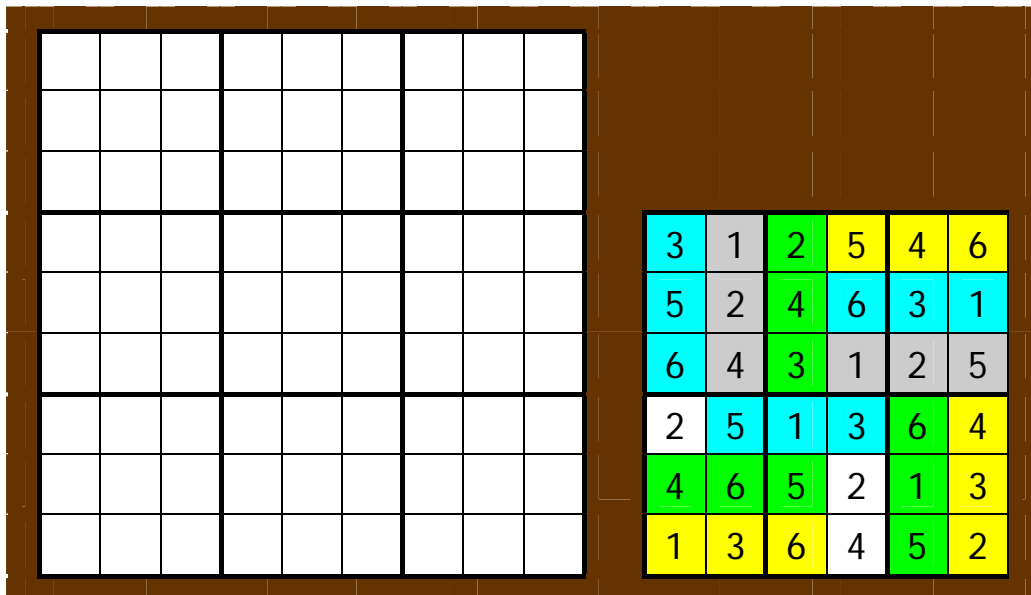
**Solution format:** First line - your score, and then the path starting from the home.

For the given example solution should look like this:

52;

d4, c4, c5, b5, b4, b3, c3, d3, d2, d1, c1, b1, a1, a2, a3, a4, a5, a6, b6, b7, c7, d7, e7, f7, f6, g6, g5, g4, g3, g2, g1, f1, e1, e2, e3, e4, f4, f5, e5, d5, d4.

## 4. SUDOKU PARQUET



Fill the grid with numbers from 1 to 9 so you get regular sudoku, and then draw the segments that represent the size of 3x1 flooring tile. Segments can be set horizontally and vertically, they can touch, but can not overlap.

**Scoring:** For every tile add to score numbers from ends and subtract from score number from middle of tile. From the overall results subtract and the numbers from not covered fields. **Maximize your score.**

**Solution format:** First line - your score; than from left to right, from top to bottom all numbers from grid. If number is covered with horisontal tile put 'h' after number. If number is covered with vertical tile put 'u' after number.

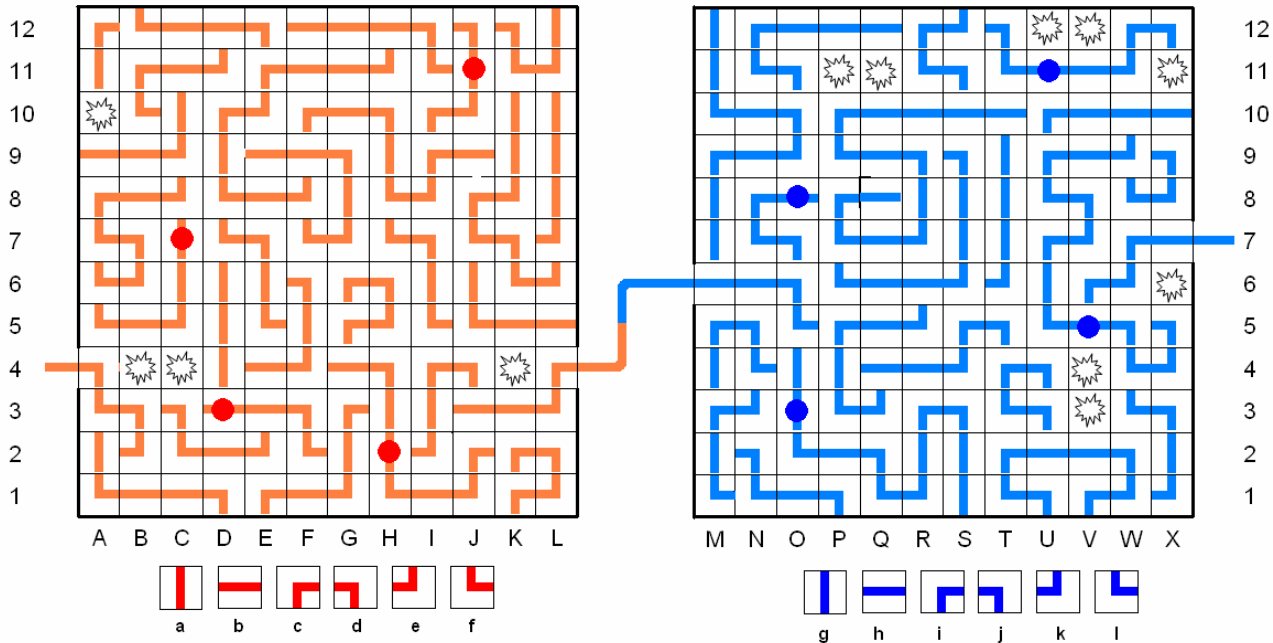
For the given example solution should look like this:

42;  
 3u1u2u5h4h6h,  
 5u2u4u6h3h1h,  
 6u4u3u1h2h5h,  
 25h1h3h6u4u,  
 4h6h5h21u3u,  
 1h3h6h45u2u.

# 5. RECYCLING

(based on idea from Sid Miler's CivWorld)

Renew the circuit into two discarded boards. The left panel has connector on the A4 and L4 and right one in the fields M6 and X7. For the reconstruction of the left board use the elements a-f, and for right board g-l. You should link connectors through all the LEDs (left C7, D3, H2, J11; right O3, O8, U11, V5). Elements can not be put on LED and damaged fields (eg A10). Elements can not be rotated or mirrored.



**Scoring:** Result is a sum of used elements values. In the beginning each element value is 100. After setting the element on the board it's value is doubled for the next move, and values of all other elements of same color is reduced with 10. Reducing values goes up to 10 (ie the value can not be zero). **Minimize your score.**

**Example:** Start of solution can be like this:

Move	Value	a	b	c	d	e	f
		100	100	100	100	100	100
aA3	100	200	90	90	90	90	90
eD1	90	190	80	80	80	180	80
dD2	80	180	70	70	160	170	70
cC3	70	170	60	60	60	160	60
aE4	170	340	50	50	50	150	50
eE3	150	330	40	40	40	300	40
....							
Score	$\Sigma = \text{xxxx}$						

**Solution format:** First line - your score; than, for every move - label of element that is placed on a board and field where it is inserted. Devide moves with commas.

For the given example solution should look like this:

xxxxx

aA3, eD1, dD2, cC3, aE4, eE3....