7th World Sudoku Championship

21st World Puzzle Championship

1-3 October 2012 KRALJEVICA, CROATIA 4-7 October 2012

## 21ST World Puzzle Championship
## CROATIA, October 1-7 2012

# INSTRUCTION BOOKLET

## Schedule:

**Thursday, October 4th**

| | | |
|---|---|---|
| Part 1: | **Domino Hunt** | 10.00. - 10.30. |
| Part 2: | **Blackjack** | 10.45. - 12.45. |
| Part 3: | **Twisted Puzzles** | 14.45. - 15.45. |
| Part 4: | **Easy as ABC** | 16.00. - 16.30. |
| Part 5: | **Black and White** | 16.45. - 18.15. |
| Part 6: | **Marina** | 18.45. - 19.10. |

**Friday, October 5th**

| | | |
|---|---|---|
| Part 7: | **Lines & Arrows** | 9.30. - 10.30. |
| Part 8: | **Assorted Puzzles** | 10.45. - 11.45. |
| Part 9: | **Metropolis** | 12.00. - 12.30. |
| Part 10: | **Anthology** | 14.30. - 16.00. |
| Part 11: | **Something Newish** | 16.15. - 17.15. |
| Part 12: | **Half Dominoes** | 17.30. - 18.20. |
| Part 13: | **Messed up Link** | 19.00. - 19.45. |

**Saturday, October 6th**

| | |
|---|---|
| **Individual playoffs** | 10.00. - 13.00. |

# GENERAL RULES OF WPC 2012

This instruction booklet contains all the necessary information regarding puzzles and competition of the 21st World Puzzle Championship and competitors are welcome to use it during the course of the competition.
The competition is divided into 13 parts which will be held over two days of puzzle solving. 11 of them are individual parts. Parts 6 and 13 are solved by teams of 4 competitors.

## SCORING AND BONUSES

In all puzzles in the championship points are awarded only if the puzzle is completely correctly solved (except where indicated otherwise). Partial points are awarded only in part 12 and for some puzzles in parts 2, 8 and 10, and they are explained further in the booklet.
Scoring in part 6 is different, done according to a scoring system also explained further in the booklet.
In individual parts 1, 4 and 9 order bonuses are available for 10 fastest solvers. The bonus points are, in order of submission: 25, 21, 18, 15, 12, 10, 8, 6, 4 and 2, respectively.
Solving times for these parts are 30 minutes each, but this is the approximate solving time. The real solving time will depend on competitors. In the moment when the 20th competitor finishes and hands in his/her puzzle booklet to a judge solving in those parts will be interrupted. If after 30 minutes of solving less than 10 competitors have finished solving, there will be 5 minutes of extra time for solving, but only one 5-minute extension is possible.
In team part 13 there are bonuses for 5 fastest teams and the points are: 100, 80, 60, 40 and 20, respectively. There will be no interruption or time extension in this part.
In all other individual parts there are time bonuses available for solvers who finish before the time runs out. 1 point will be awarded for every incomplete 30 seconds of time saved (eg. 1:47 before the end will score 4 extra points).
Both time and order bonus points are awarded only if all the puzzles in the set are completely correctly solved.

## JUDGING AND PROTESTING

All puzzle booklets will be checked by three different judges.
In individual and team parts where order or time bonuses are assigned competitors/teams who finish solving before the time runs out need to raise their hand(s) and clearly state that they have finished. A judge will come to their table and note the exact time of submission on their puzzle booklets.
After the judges check and evaluate all the puzzle booklets of a puzzle part, point ranking will be made public on scoreboards and on the official WSC/WPC 2012. web site.
There will be two different rankings: official (only for official competitors/teams from all countries) and unofficial (for all competitors and teams taking part in the championship).
Each country can have up to 4 official competitors and 1 team (which consists of those 4 competitors only) in the official ranking table. All other competitors from a country will be listed in the unofficial ranking table only. Unofficial individual competitors can form unofficial teams (a country's B-team or UN-teams by mixing with competitors from different countries) in what ever way they like.
Competitors and team captains have the right to make a complaint to the judges, regarding checking and evaluation of any part of their puzzle booklets, by 10.00 on Saturday, October 6th, before the start of the playoffs.

## RANKING AND TIE BREAKING

Individual ranking will be done by summing up the results from 11 individual parts. Top 8 official competitors will compete in individual playoffs.
If two or more competitors are tied after final results, the criteria for determining the higher ranked competitor are, in order:
- points received from part 2 (Blackjack)
- points received from part 10 (Anthology)
- points received from part 5 (Black and White)
- draw

Team ranking will be done by summing up the results from team parts and individual results of 4 team members.
There will be no team playoffs.
If two or more teams are tied after final results, the criteria for determining the higher ranked team are:
- points received from part 6 (Marina)
- points received from part 13 (Messed up Link)
- the lower total of ranking positions of a team's members in individual competition
- draw

## PLAYOFFS

Individual playoffs will be held on billboards in front of the audience.
They will be conducted in several rounds - quarterfinal, semifinal and final.
There will be no time advantage for higher ranked competitors, but they will have the advantage of choosing the puzzles to be solved in their rounds.
You will find further details regarding playoffs at the end of the booklet.

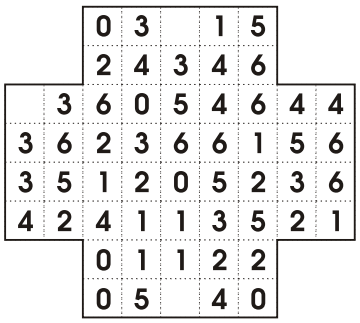
## CODE OF CONDUCT

All competitors and teams are kindly asked to be in their assigned tables before the official starting time of each part.
No conversation will be allowed between competitors (except in the team parts) or between spectators/captains and competitors during all parts.
The use of any electronic device (mobile phones, laptops, tablets, calculators, music players with headphones etc.) is not allowed during all parts.
Individuals and teams who finish solving before the end of official solving time are not allowed to leave their tables before the end of official solving time.
Organizers will give their best to insure fair competition and the application of all rules.

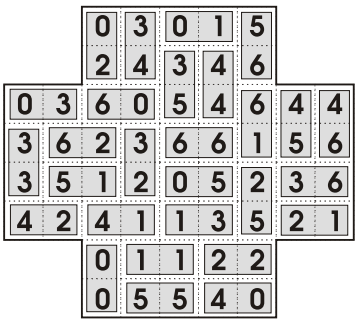
# PART 1 DOMINO HUNT - individual

October 4th, 10.00. - 10.30.

We have placed a complete domino double-6 set (9 set in last puzzle) in the grid and then erased the borders of the dominoes. Unfortunately some numbers on the dominoes were erased too. Reconstruct the arrangement of the dominoes in the grid.




0-0
0-1 1-1
0-2 1-2 2-2
0-3 1-3 2-3 3-3
0-4 1-4 2-4 3-4 4-4
0-5 1-5 2-5 3-5 4-5 5-5
0-6 1-6 2-6 3-6 4-6 5-6 6-6




PUZZLE 1 **5** POINTS

PUZZLE 2 **5** POINTS

PUZZLE 3 **5** POINTS

PUZZLE 4 **7** POINTS

PUZZLE 5 **7** POINTS

PUZZLE 6 **7** POINTS

PUZZLE 7 **10** POINTS

PUZZLE 8 **14** POINTS

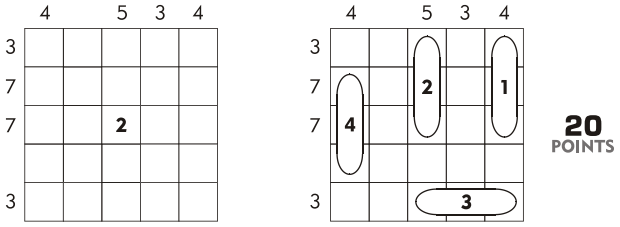
MAXIMUM **60** POINTS
+ORDER BONUS

# PART 2 **BLACKJACK - individual**

**October 4th, 10.45. - 12.45.**

## PUZZLE 1 - **PASSENGER SHIPS**

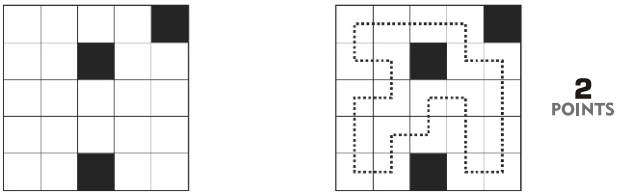
Locate 12 (4 in the example) passenger ships (rectangles of size 1x3 cells) horizontally or vertically in the grid. Ships cannot touch each other, not even diagonally. There is a different number of passengers on each ship, from 0 to 11 (1-4 in the example). Numbers outside the grid indicate the sum of passengers on the ships in the corresponding row/column. Numbers given in the grid represent the number of passengers on the ship occupying the corresponding cell.



**20 POINTS**

## PUZZLE 2 - **SIMPLE LOOP**

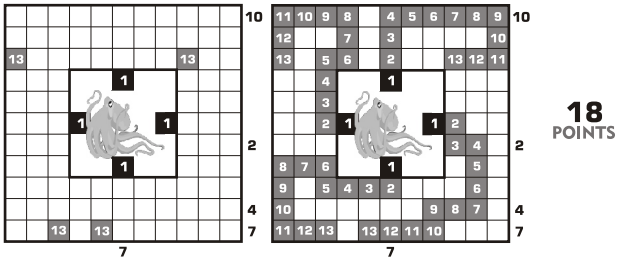
Draw a single closed loop going through ALL the white cells of the grid, consisting only of vertical and horizontal segments connecting the centers of neighbouring cells. The loop cannot cross itself or go through any of the black cells.



**2 POINTS**

## PUZZLE 3 - **GIANT OCTOPUS**

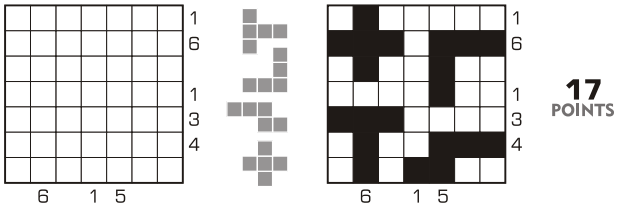
The grid represents a sea where a giant octopus lives, its head being in the centre of the grid. Find the octopus's 8 tentacles (4 in the example), each of them being 21 squares long (13 in the example). Each tentacle starts in a different square marked with number 1 and ends in a different square marked with number 21. Tentacles can neither touch nor cross themselves or each other. Numbers outside the grid indicate how many cells are occupied by the tentacles (including squares with numbers 1 and 21) in the corresponding row/column.



**18 POINTS**

## PUZZLE 4 - **PENTAMINO**

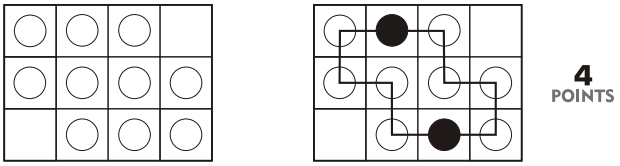
Place the given pentaminoes in the grid. Pentaminoes can be rotated and mirrored but they cannot touch each other, not even diagonally. Numbers outside the grid indicate how many cells are occupied by the pentaminoes in the corresponding row/column.



**17 POINTS**

## PUZZLE 5 - **LOOP SPLITTER**

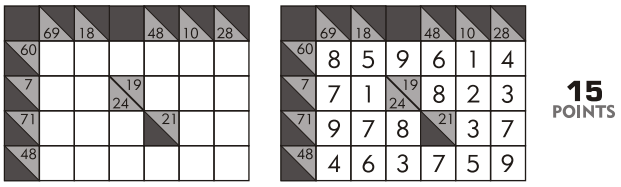
Paint 2 circles black. Then draw a single closed loop (by connecting horizontally and vertically neighbouring squares) that goes through every circle (but not necessarily through every cell in the grid). The loop can make a turn only in a circle. The loop must make a turn in every white circle and must pass straight through every black circle. There are exactly 21 white circles (4 in the example) between the 2 black circles going along the loop.



**4 POINTS**

## PUZZLE 6 - **X-KAKURO**

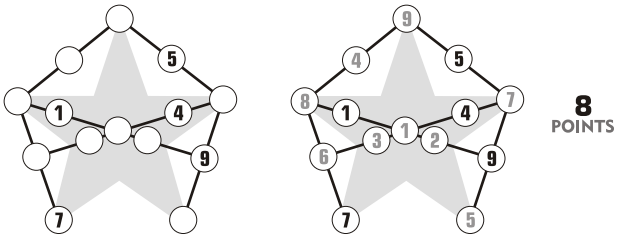
Place a number 1 - 9 in every white cell of the grid so that no number is repeated in any sequence of vertically or horizontally connected white cells. A number to the left and above each such sequence is a result of the following operation: multiply first 2 numbers (from left to right or top to bottom) in the sequence, then add the rest (if there are any).



**15 POINTS**

## PUZZLE 7 - **SUM STAR**

Place a different number 1 - 9 into every empty circle so that the sum of four connected numbers in every straight line is 21. Numbers may repeat in a straight line.



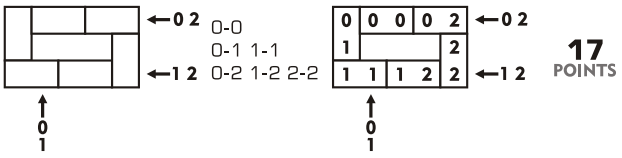
**8 POINTS**

# PART 2 **BLACKJACK - individual**

**October 4th, 10.45. - 12.45.**

## PUZZLE 8 - **DOMINO CASTLE**

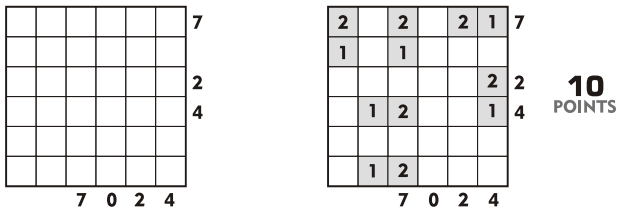
Place the given set of domino tiles into the grid. Horizontally and vertically neighbouring numbers of 2 different tiles must be equal. Lists of numbers outside the grid indicate all the numbers that occur at least once in the row/column pointed by arrows.




**17 POINTS**

## PUZZLE 9 - **2-1 TILES**

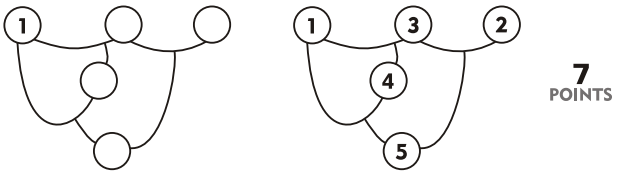
Place tiles of size 1x2 cells in the grid, with numbers 1 and 2 each. Tiles can be rotated but they cannot touch each other, not even diagonally. Numbers outside the grid indicate the sum of all the numbers in the corresponding row/column.



**10 POINTS**

## PUZZLE 10 - **NUMBER TREE**

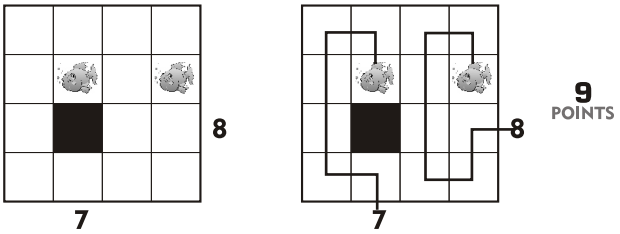
Place a different number 1 - 21 (except those already written; 1-5 in the example) into every empty circle. Each number in a circle with a branch going up from that cirle must be the sum of numbers directly connected to it by that branch.



**7 POINTS**

## PUZZLE 11 - **OUT FISHING**

Connect each number outside the grid with a different fish, the number indicating the length of the line (including the cell with the fish). The lines pass through horizontally and vertically neighbouring cells, cannot go diagonally, cannot cross or overlap each other and cannot pass through black cells. All white cells have to be used.



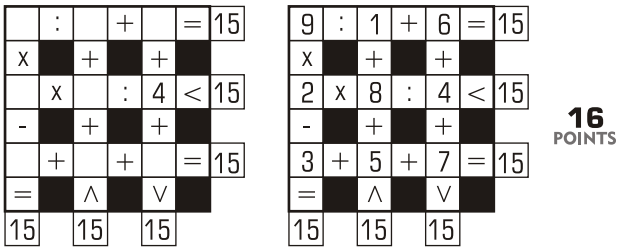
**9 POINTS**

## PUZZLE 12 - **CROSS MATH**

Place a number 1 - 9 into every empty cell of the four mathematical operation tables (one table in the example). There must be nine different numbers in each of the four tables. Four numbers located in the same place in all four tables must also be different. Mathematical operations are done from left to right and from top to bottom (no precedence). All equations and inequations must be true.

**Note:** partial points are available for one or more completely solved tables, but only if the partial solution is the same as the unique complete solution of the whole puzzle:

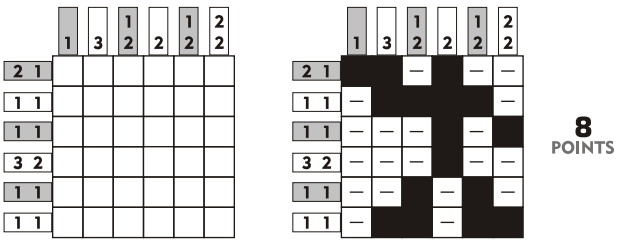
- any 1 correctly solved table - 3 points
- any 2 correctly solved tables - 7 points
- any 3 correctly solved tables - 11 points
- completely correctly solved puzzle - 16 points



**16 POINTS**

## PUZZLE 13 - **ZEBRA**

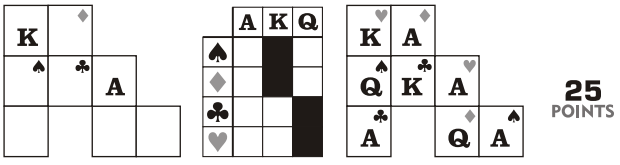
Create a picture by painting some cells in the grid, as in a classic paint-by-numbers puzzle, with rules slightly changed: numbers on grey background represent sequences and lengths of black cells, while numbers on white background represent sequences and lengths of white cells in the corresponding row/column.



**8 POINTS**

## PUZZLE 14 - **BLACKJACK TURTLE**

Place a complete deck of 52 playing cards (8 cards in the example) in the grid. Some suits and cards are already given. The sum of values in every sequence of two or more horizontally or vertically connected cards must be 21. Every J, Q and K has value of 10 while A can have value of either 1 or 11. No card or suit can be repeated in a sequence.



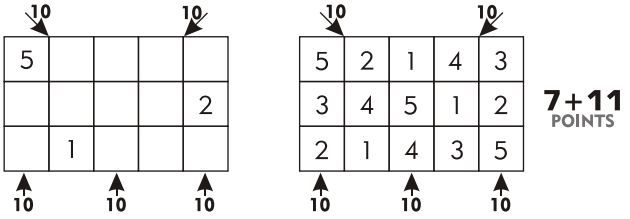
**25 POINTS**

# PART 2 **BLACKJACK - individual**

**October 4th, 10.45. - 12.45.**

## PUZZLE 15 - **SUM 21**

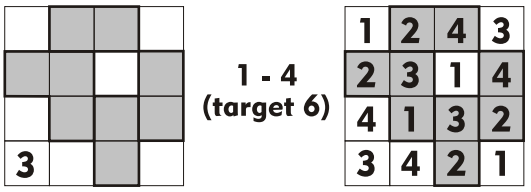
Write a number 1 - 10 (1-5 in the example) into every empty cell of the grid so that no number is repeated in any row or column. Numbers also cannot be repeated on any diagonal pointed by an arrow. The sum of numbers in the direction of an arrow is always 21 (10 in the example).




**7+11** POINTS

## PUZZLE 16 - **TARGET**

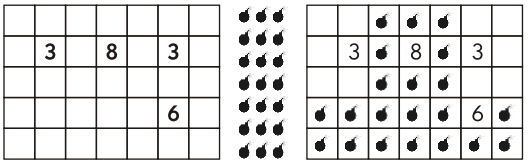
Write a number 1 - 7 (1-4 in the example) into every empty cell of the grid, so that no number is repeated in any row or column. There are some "cages" in the grid - groups of gray cells with thicker borders. Reach the target number - 21 (6 in the example) - in every cage by using either addition or multiplication of all numbers in a cage. Numbers may be repeated in a cage.




**6** POINTS

## PUZZLE 17 - **MINESWEEPER**

Locate 21 mines in the grid, one mine per cell. There are no mines in cells with numbers. Numbers indicate how many mines are located in 8 neighbouring cells.




**8** POINTS

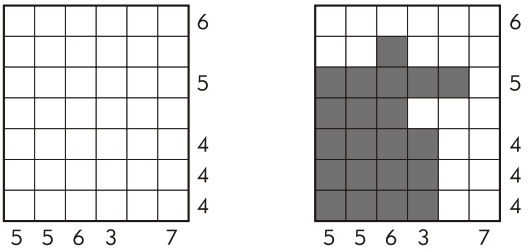
## PUZZLE 18 - **NEW AGE**

Place a letter into every empty cell of the grid so that each phrase written above the grid can be read, going horizontally, vertically or diagonally from one cell to another neighbouring cell. Starting and ending letters can be anywhere in the grid. A letter can be used multiple times but not consecutively (i.e. letters can be repeated in the grid and if there are two identical neighbouring letters in a phrase there must also be two identical neighbouring letters in the grid).


**6** POINTS

## PUZZLE 19 - **LINKED SQUARES**

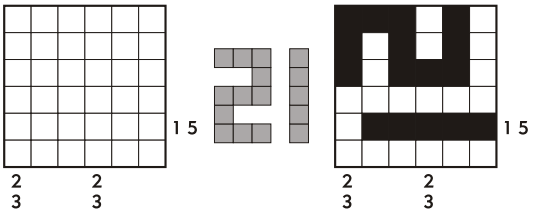
Divide the grid along the grid lines into two parts, each having the size of 21 connected squares. Numbers outside the grid indicate the longest sequence of connected squares belonging to one part of the grid in the corresponding row/column.




**5+5** POINTS

## PUZZLE 20 - **BLACK 21**

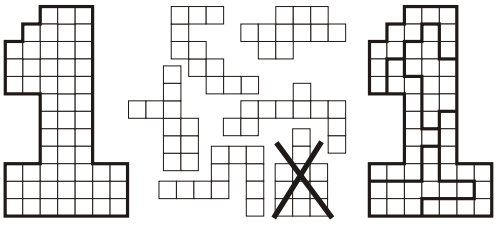
Paint some cells black to form numbers 2 and 1 (of the given shape and size) in the grid. Numbers can be rotated but not mirrored. There must be the same amount of 2's and 1's. There are two numbers given next to each row and below every column. One of those numbers indicates the sum of 2's and 1's, while the other indicates the number of black squares in the corresponding row/column. Shapes of numbers 2 and 1 in the grid cannot touch, not even diagonally.




**9** POINTS

## PUZZLE 21 - **MOSAIC**

Find the position of the given pieces in the puzzle grid. Pieces can be rotated but not mirrored. One piece remains unused.



**7** POINTS

MAXIMUM **240** POINTS

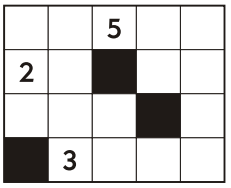
# PART 3 **TWISTED PUZZLES - individual**

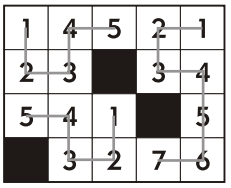
October 4th, 14.45. - 15.45.

## PUZZLE 1 - **ALIEN WORM**

Fill the grid with 5-cell long "number worms". Worms have consecutively written numbers on their bodies, from 1 to 5. The same numbers cannot touch, not even diagonally. All cells in the grid (except black cells) are used by worms. Numbers already written have to be parts of worms.

**Note:** there is one worm longer than others - 7 cells long, with numbers from 1 to 7!



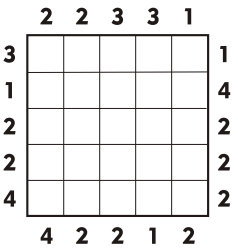


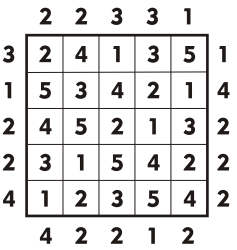
**15** POINTS

## PUZZLE 2 - **LYING SKYSCRAPER**

Follow the standard rules for skyscrapers - fill the grid with numbers 1-7 (1-5 in the example) so that every row and column contains different numbers; numbers outside the grid indicate how many skyscrapers are visible from the corresponding direction.

**Note:** one number outside the grid is lying! It doesn't indicate the number of visible skyscrapers but the height of the first skyscraper in the corresponding direction! (it is possible that more than one number outside the grid is the same as the height of the skyscraper first seen in the corresponding direction, but only one of them is the liar)



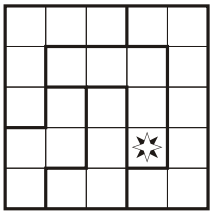


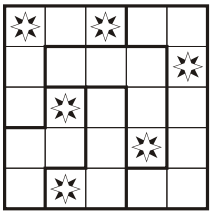
**13** POINTS

## PUZZLE 3 - **SPY STAR**

Place two stars (one star in the example) in each row, column and thickly outlined area (one star per cell) so that the stars do not touch, not even diagonally.

**Note:** there is one row, one column and one area with three stars! (with two stars in the example)



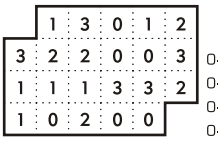


**6** POINTS

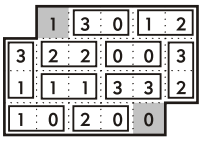
## PUZZLE 4 - **DEFICIENT DOMINOES**

A complete set of 28 domino tiles (10 tiles in the example) was placed in the grid, but their edges were removed. Locate the positions of all the tiles and draw their edges.

**Note:** some numbers in the grid are not used by any domino tile!



0-0
0-1 1-1
0-2 1-2 2-2
0-3 1-3 2-3 3-3

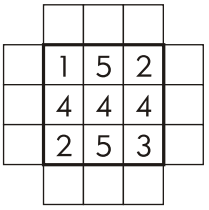


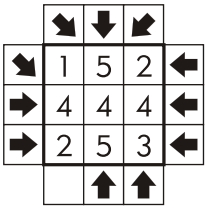
**14** POINTS

## PUZZLE 5 - **MISSING ARROWS**

Place arrows into cells around the grid, pointing in one of the eight possible directions (horizontally, vertically or diagonally), so that each arrow points towards the grid with numbers. Each number in the grid indicates how many arrows are pointing at that number.

**Note:** some cells around the grid will remain empty!



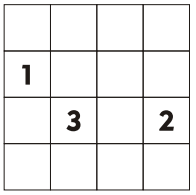


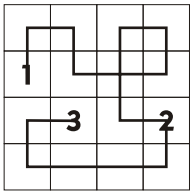
**8** POINTS

## PUZZLE 6 - **INTRICATE CONNECTION**

Draw a line that connects horizontally and vertically neighbouring cells, starts in the cell with number 1, passes through all the cells in the grid and through all numbers consecutively (1-2-3-4...) and ends in the cell with number 10 (number 3 in the example). The line cannot overlap itself.

**Note:** there is exactly one cell in the grid (but it is not a cell with a number) where the line crosses itself!



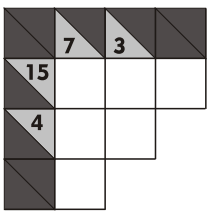


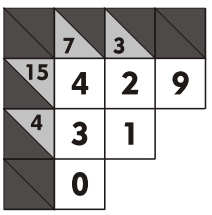
**5** POINTS

## PUZZLE 7 - **HOLLOW KAKURO**

Place a number 1-9 in every white cell of the grid so that no number is repeated in any sequence of vertically or horizontally connected white cells. A number to the left and above each such sequence indicates the sum of all the numbers in the corresponding sequence.

**Note:** there is one cell in the grid where 0 has to be placed.





**17** POINTS

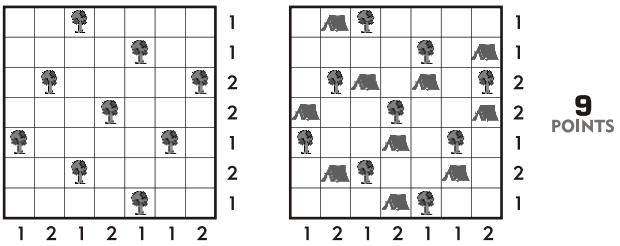
# PART 3 **TWISTED PUZZLES - individual**

October 4th, 14.45. - 15.45.

## PUZZLE 8 - **FRIENDLY CAMPERS**

Locate tents in the grid so that they don't touch, not even diagonally. Numbers outside the grid indicate how many tents are located in the corresponding row/column. Each tree has to be connected to exactly one tent in one of its four (horizontally and vertically) neighbouring cells.

**Note:** there is one tree in the grid which has to be connected to two tents (also not touching, not even diagonally)!

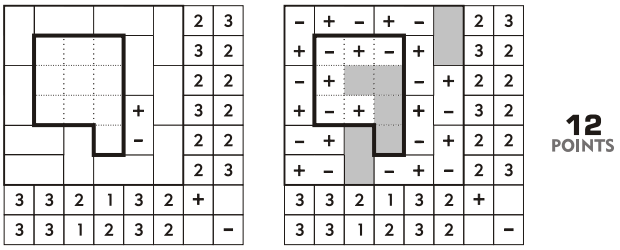


**9** POINTS

## PUZZLE 9 - **DISCHARGED MAGNETS**

The grid is divided into 2x1 rectangles and some of them are polarized. Paint black the ones that are not polarized and identify the layout of plus (+) and minus (-) poles in the rest. Each polarized rectangle has one plus and one minus pole. Identical poles can touch only diagonally. Numbers outside the grid indicate the quantity of plus and minus poles in the corresponding row/column.

**Note:** a part of the grid is not divided into rectangles - you have to determine the correct layout!

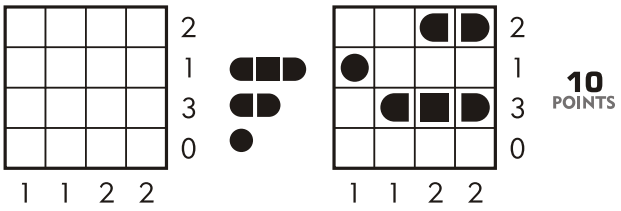


**12** POINTS

## PUZZLE 10 - **COLLIDING SHIPS**

Locate the position of the fleet shown next to the grid. The ships cannot touch each other, not even diagonally. Numbers outside the grid indicate how many cells contain parts of ships in the corresponding row/column.

**Note:** exactly two ships (of different size) are touching each other!

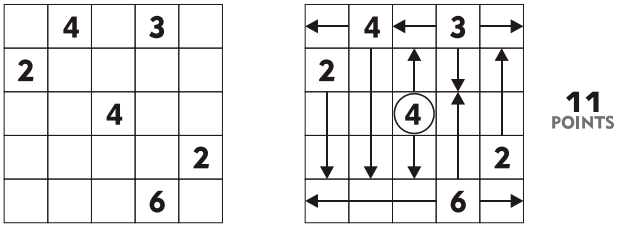


**10** POINTS

## PUZZLE 11 - **HIGH WIND**

Draw one or more horizontal and/or vertical lines from each number in the grid. Each number indicates the number of cells covered by all lines starting from that number (the cell with the number not included). Lines can neither cross nor overlap. Every cell in the grid has to be covered by a line.

**Note:** one number in the grid is incorrect!



**11** POINTS

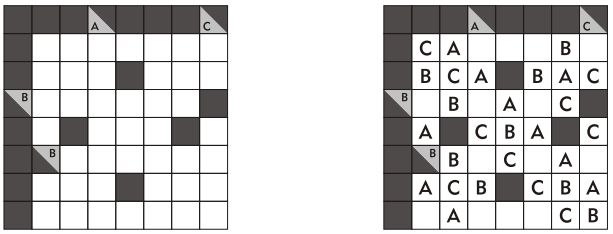
MAXIMUM **120** POINTS

# PART 4 **EASY AS ABC - individual**

October 4th, 16.00. - 16.30.

## PAGE 1 - **EASY AS ABC CROSSWORD**

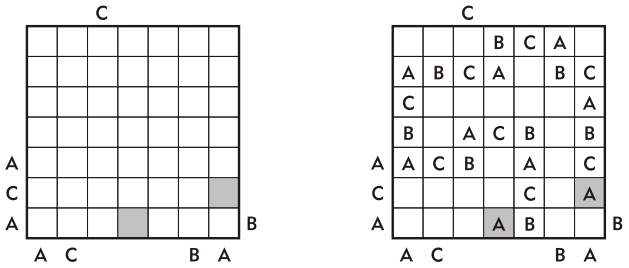
Write letters A, B and C in some of the cells in the grid so that letters are not repeated in any sequence of horizontally or vertically connected cells. Each sequence of three or more horizontally or vertically connected cells contains each of the letters exactly once. Letters above and to the left of some sequences indicate the first letter seen from the corresponding direction.



**6+7+8**
POINTS

## PAGE 2 - **EASY AS ABC SNAKE**

Draw a single 35 -cell-long (25 in the example) snake in the grid, moving horizontally and vertically. The snake's head and tail are located on the gray cells. The snake cannot cross, overlap or touch itself, not even diagonally. Write letters A, B and C onto the snake's body (one letter per cell) in a regular sequence (...-A-B-C-A-B-C-A-B-C-...). Starting and ending letters can be any one of those three letters. Letters outside the grid indicate the first letter on the snake's body seen from the corresponding direction.

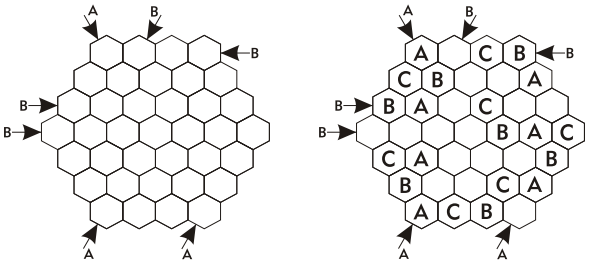


**5+6+7**
POINTS

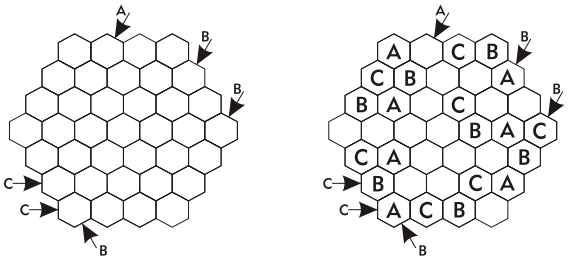
## PAGE 3 - **EASY AS ABC HEXA**

Write letters A, B and C in some hexagons in the grid so that each row in all three directions contains each letter exactly once. Letters outside the grid indicate...

... **THE FIRST** letter seen in the corresponding direction of the arrow.

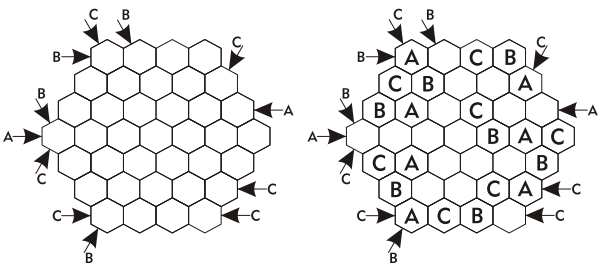


... **THE SECOND** letter seen in the corresponding direction of the arrow.



**6+6+9**
POINTS

... **NOT THE FIRST** letter seen in the corresponding direction of the arrow.



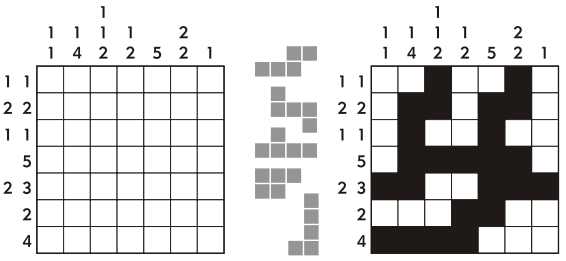
**MAXIMUM**
**60**
**POINTS**
**+ORDER BONUS**

# PART 5 BLACK AND WHITE - individual

October 4th, 16.45. - 18.15.

## PUZZLE 1 - **WHITE PENTAMINO**

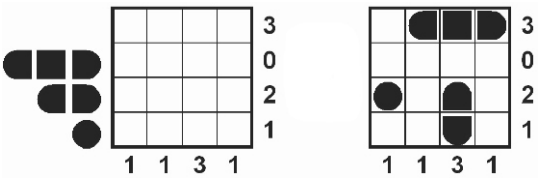
Paint some cells in the grid black. Numbers outside the grid indicate the length of the sequences of connected black squares in the corresponding row/column, but not in the order they appear. All the remaining white cells form twelve different pentaminoes (5 in the example). The pentaminoes do not touch each other, not even diagonally. They can be rotated, but not mirrored.



**18 POINTS**

## PUZZLE 2 - **BATTLESHIPS**

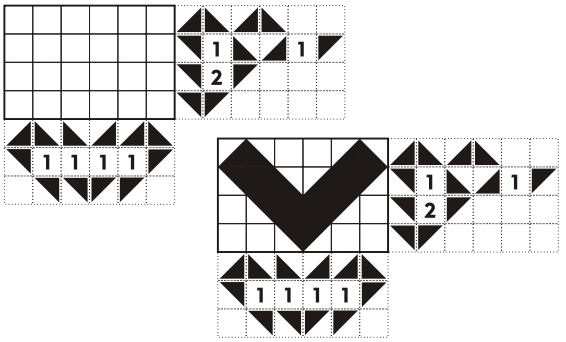
Locate the position of the fleet given next to the grid. The ships are oriented horizontally or vertically. They do not touch each other, not even diagonally. Numbers outside the grid indicate how many cells contain parts of ships in the corresponding row/column.



**8 POINTS**

## PUZZLE 3 - **PAINT-BY-NUMBERS WITH DIAGONALS**

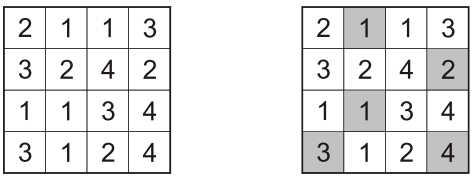
Create a picture by painting some cells in the grid black. Cells can be completely black or only half black, diagonally divided into black and white triangles. Numbers and triangles outside the grid indicate the length and the sequence of painted cell blocks in the corresponding direction. Each painted cell block represented by a number consists only of completely painted cells, while each triangle outside the grid represents a single triangle of the same shape (without rotation). Two blocks of completely painted cells have to be separated by at least one completely white cell, but a triangle can be adjacent to another triangle or a painted block.



**12 POINTS**

## PUZZLE 4 - **HITORI**

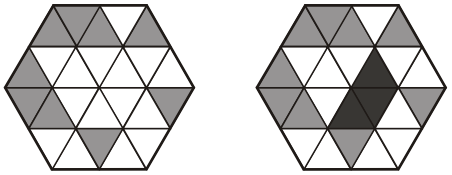
Paint some cells with numbers black, so that all the remaining white cells contain different numbers in each row and column, and are all connected horizontally or vertically in a single group. Painted cells can touch only diagonally.



**11 POINTS**

## PUZZLE 5 - **FIFTY-FIFTY**

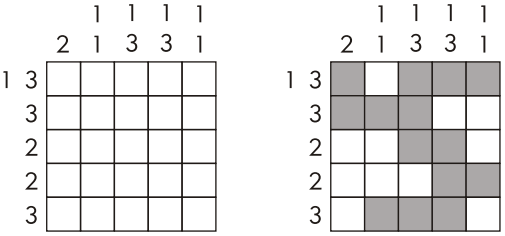
Paint some white triangles black, so that every equilateral hexagon that consists of six small triangles has three painted and three white triangles.



**5 POINTS**

## PUZZLE 6 - **CORAL**

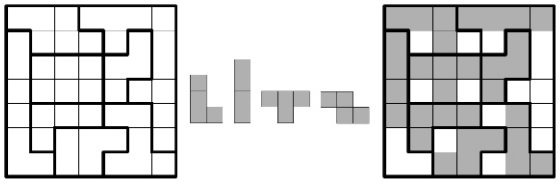
Paint some cells in the grid black to form a single continuous wall of black cells - a coral - which doesn't touch itself diagonally and doesn't surround any white cells. Numbers outside the grid indicate the length of the painted blocks of cells in the corresponding row/column, but not in the order they appear. There cannot be any 2x2 black area anywhere in the grid.



**25 POINTS**

## PUZZLE 7 - **LITS**

Paint four cells in each outlined area so that each area includes one tetramino shape. Tetraminoes can be rotated and/or mirrored. Painted cells form a single interconnected area which doesn't include any 2x2 black square. Same tetraminoes can touch each other, but only diagonally.



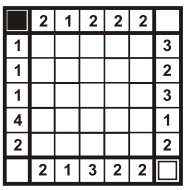
**5 POINTS**

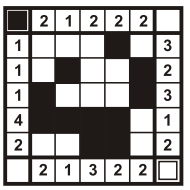
# PART 5 **BLACK AND WHITE - individual**

October 4th, 16.45. - 18.15.

## PUZZLE 8 - **PAINT-BY-SEQUENCE**

Paint some cells in the grid black. Numbers above and to the left of the grid indicate the longest sequence of black cells in the corresponding row/column. Numbers below and to the right of the grid indicate the longest sequence of white cells in the corresponding row/column.

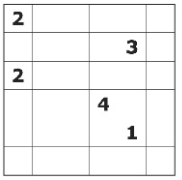


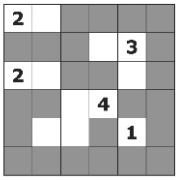


**7** POINTS

## PUZZLE 9 - **NURIKABE**

Paint some cells in the grid to form a single interconnected area of black cells with no 2x2 black squares. All the remaining white cells represent islands. Cells with numbers must remain white and each island must contain exactly one number, which indicates the size of that island. Islands can touch each other, but only diagonally.

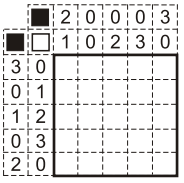


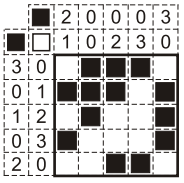


**6** POINTS

## PUZZLE 10 - **PAINT-BY-FRAME**

Paint some cells in the grid black. Numbers above and to the left of the grid indicate the number of black/white cells framed by cells of opposite colour in the corresponding row/column. Framed cells do not need to be consecutive.

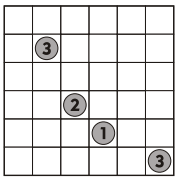


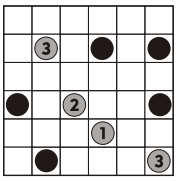


**20** POINTS

## PUZZLE 11 - **LIGHTHOUSES**

Locate some ships of size of one cell in the grid. Circles with numbers represent lighthouses. Each number indicates how many ships are located in the corresponding row and column. Ships can touch neither the lighthouses nor each other, not even diagonally.

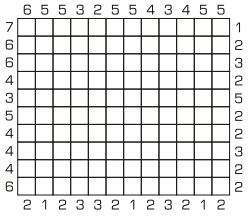


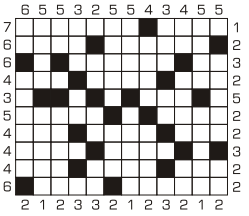


**7** POINTS

## PUZZLE 12 - **BLANK CROSSWORD**

Create a crossword grid by painting some cells black, with all the remaining white cells interconnected. Numbers below and to the right of the grid indicate the number of black cells in the corresponding row/column. Numbers above and to the left of the grid indicate the longest sequence of white cells (the longest word) in the corresponding row/column. Black cells can touch each other.

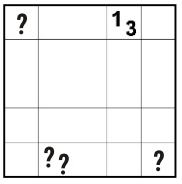


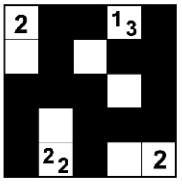


**19** POINTS

## PUZZLE 13 - **TAPA**

Paint some squares black to create a continuous wall. Number(s) in a square indicate(s) the length of black cell blocks on its neighbouring cells. If there is more than one number in a square there must be at least one white cell between the black cell blocks. Painted cells cannot form a 2x2 square anywhere in the grid. There are no wall segments on cells containing numbers. Question marks must be replaced with **even** numbers.

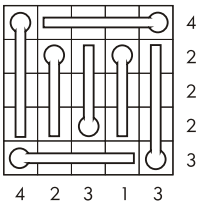


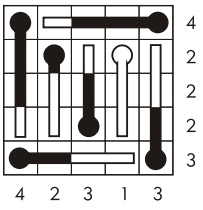


**22** POINTS

## PUZZLE 14 - **THERMOMETERS**

The grid consists of a number of thermometers which have to be painted black (filled with mercury). A thermometer can be completely full, empty, or partially filled, up to the gridlines, but always starting from the thicker part. Numbers outside the grid indicate the number of parts of thermometers filled with mercury in the corresponding row/column.

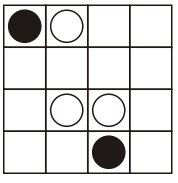


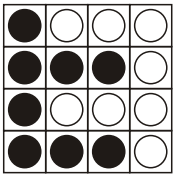


**9** POINTS

## PUZZLE 15 - **YING-YANG**

Fill each empty cell with either a black or a white circle. All white circles and all black circles should form two distinct areas. There can be no 2x2 square consisting of same colour circles anywhere in the grid. The number of black and white circles in the grid is the same.





**6** POINTS

MAXIMUM **180** POINTS

## PART 6 **MARINA - team**

October 4th, 18.45. - 19.10.

This is a manipulative optimizing team puzzle.
The grid represents a harbor – Marina Kraljevica. Your task is to score as many points as possible by placing boats onto the grid, following these rules:

1. boats have to be placed only on the blue background representing the sea; no part of any boat can stand on any other colour in the grid
2. boats have their stern, bow and two sides; each boat has to be connected to the shore with at least one of its sides or its stern, full-length (see examples)
3. there are three different types of boats: small (covering 2x4 cells, with sides 3 cells long), medium (covering 3x5 cells, with sides 4 cells long) and large (covering 4x7 cells, with sides 5 cells long); they score points proportionate to their size (8, 15 and 28 points respectively)
4. boats have to be placed horizontally or vertically and aligned with grid lines (eg. a boat 2 cells wide cannot cover 3 cells)
5. boats cannot touch, not even diagonally
6. although a boat's bow is not covering the whole area of its corresponding rectangle, the boats are considered to be of rectangular shape; therefore two boats' rectangles cannot overlap although their bows don't even touch (see examples)
7. two boats' rectangles may touch as long as the boats themselves don't touch each other (not even in a single point)
8. each boat placed in the harbor has to be able to exit the harbor (through the exit marked by the arrow)
9. although the task of the puzzle is only to place boats in the harbor (and not to move them around), they have to follow the rules for moving in order to exit the harbor
10. boats move forward, backward and sideways (they cannot move diagonally)
11. while moving, a boat can touch other boats located in the harbor (eg. a passage 4 cells wide between two boats is enough for another boat 4 cells wide to pass)
12. while moving, a boat can turn by 90 degrees; in order to do so, it needs a square of the sea, with a side equal to the boats length, not occupied by any other boats (remember that the boats are treated as rectangles and even if a boat's bow is not occupying the cell needed by another boat to turn, the cell still belongs to the boat's rectangle and therefore cannot be used for rotation of another boat )
13. the shore of the harbor is divided into three regions: red, yellow and green; the boats have to be placed next to those shore colours and cannot touch the gray portion of the shore (except while moving)
14. the red shore is the closest to the harbor buildings (part of the grid with the name of the harbor) and is therefore the most expensive – the points scored by any boat touching at least one cell of the red shore (diagonal touching is not enough!) will be multiplied by 5
15. the yellow shore is a bit further and less expensive - the points scored by the boats touching at least one cell of the yellow shore (except those already scored for the red shore) will be multiplied by 3
16. the green shore is the cheapest – the points scored by the rest of the boats touching only the green shore will be multiplied by 2
17. boats not following any of the listed rules (touching the shore, not touching other boats, ability to exit the harbor) will not be scored.

## PART 6 **MARINA - team**

**October 4th, 18.45. - 19.10.**

After counting all the scores, a list of teams will be made and the points for this team part will be awarded as follows: the best score will get 400 points, the second 370, the third 340, and so on, according to the next table.

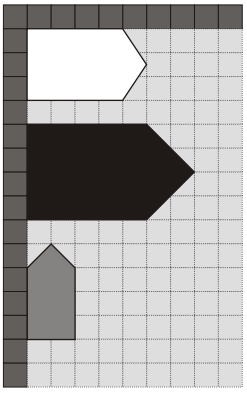
| RANK | POINTS | RANK | POINTS | RANK | POINTS |
|---|---|---|---|---|---|
| 1. | **400** | 11. | **200** | 21. | **145** |
| 2. | **370** | 12. | **190** | 22. | **140** |
| 3. | **340** | 13. | **185** | 23. | **135** |
| 4. | **315** | 14. | **180** | 24. | **130** |
| 5. | **290** | 15. | **175** | 25. | **125** |
| 6. | **270** | 16. | **170** | 26. | **120** |
| 7. | **250** | 17. | **165** | 27. | **115** |
| 8. | **235** | 18. | **160** | 28. | **110** |
| 9. | **220** | 19. | **155** | 29. | **105** |
| 10. | **210** | 20. | **150** | 30. | **100** |

Note: only A-teams will get points according to this scoring table. B-teams will get points for their score in proportion to two closest (one higher and one lower) A-team scores. If a B-team has a higher score than the best A-team, they will get more than 400 points, in proportion to the best and second best A-team, but no more than 450 points. If a B-team has a lower score than the least successful A-team, they will get less points than the least successful A-team, in proportion to the last and the penultimate A-team. No team can get less than 100 points (unless disqualified or not submitting a solution for any other reason).

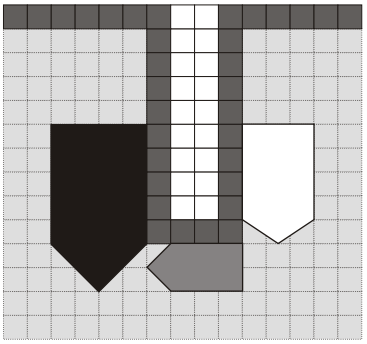
At the end of this part all competitors, captains and other attendees, except one member of each team, will be asked to leave the competition hall. A judge will come to each team table and take a photo of the team's solution. After that, the team representatives are also free to leave the competition hall.

# PART 6 **MARINA - team**

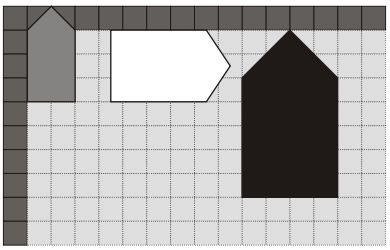
October 4th, 18.45. - 19.10.



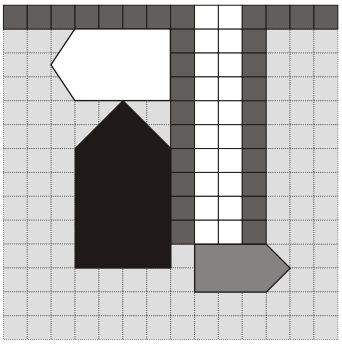
three types of boats and examples of **correct** placement



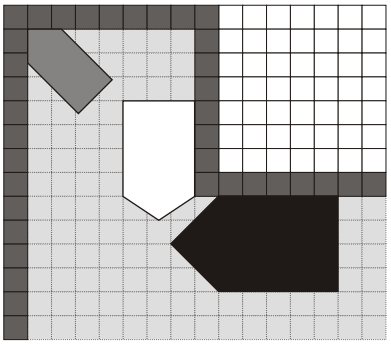
**correct** placement - although boats' rectangles touch, the boats themselves don't touch

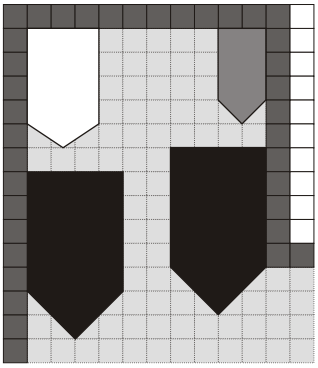


examples of **incorrect** placement of boats

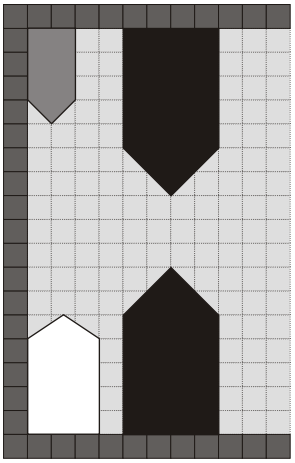


other examples of **incorrect** placement of boats





the gray ship can exit the harbor but the white one cannot



the gray ship can turn and exit the harbor but the white one cannot turn

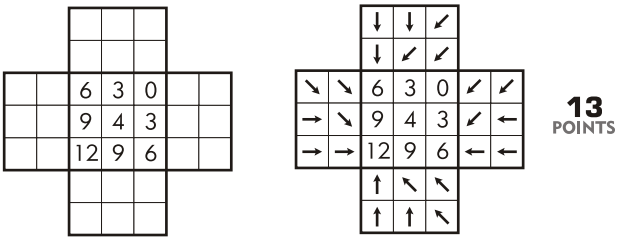
MAXIMUM **400** POINTS

# PART 7 LINES & ARROWS - individual

October 5th, 9.30. - 10.30.

## PUZZLE 1 - **DOUBLE ARROWS**

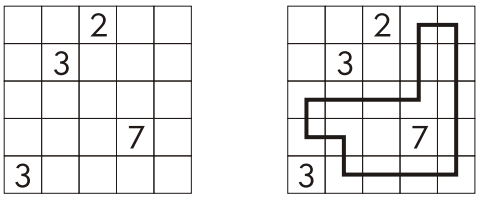
Put an arrow into every empty cell, pointing in one of the eight possible directions (horizontally, vertically or diagonally), so that each arrow points towards the grid with numbers. Each number in the grid indicates how many arrows are pointing at that number.



**13** POINTS

## PUZZLE 2 - **LOOKING FOR THE LOOP**

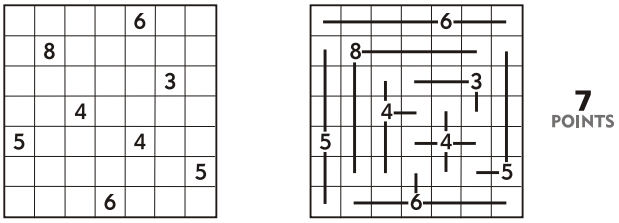
Draw a single closed loop in the grid by connecting horizontally and vertically neighbouring cells. The loop can touch itself, but it cannot cross or overlap itself. Cells with numbers cannot be parts of the loop. Each number in the grid indicates how many of the eight neighbouring cells are used by the loop.



**3** POINTS

## PUZZLE 3 - **FOUR WINDS**

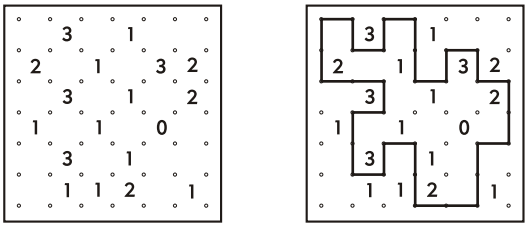
Draw one or more horizontal and/or vertical lines from each number in the grid. Each number indicates the number of cells covered by all lines starting from that number (the cell with the number not included). Lines can neither cross nor overlap. Every cell in the grid has to be covered by a line.



**7** POINTS

## PUZZLE 4 - **FENCES**

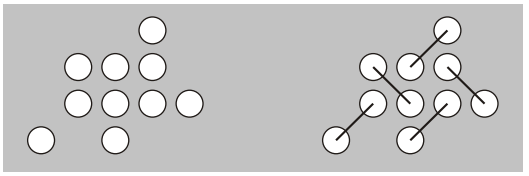
Draw a single closed loop in the grid by connecting horizontally and vertically neighbouring dots (not all dots have to be used by the loop). The loop cannot touch, cross or overlap itself. Each number in the grid indicates how many of the four cell's borders are used by the loop.



**5** POINTS

## PUZZLE 5 - **CIRCLE PAIRS**

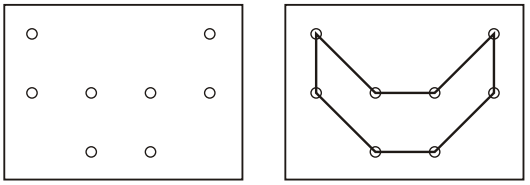
Make pairs of circles in the grid by connecting two circles with diagonal lines only. The lines cannot cross. All circles have to be paired.



**7** POINTS

## PUZZLE 6 - **DOT LOOP**

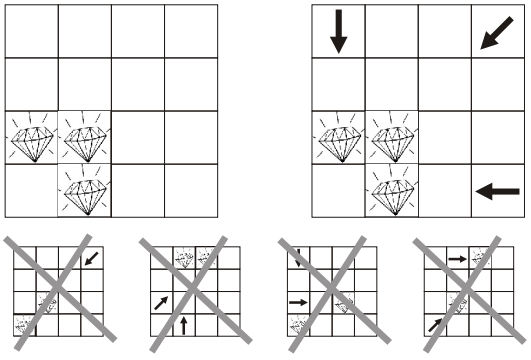
Draw a single closed loop in the grid by connecting horizontally, vertically and diagonally neighbouring dots. The loop cannot touch, cross or overlap itself and it has to pass through every dot. All horizontal and vertical segments of the loop (between two dots) are of the same length. All diagonal segments (between two dots) are of the same length as well. Segments of the loop have to be in the following sequence: horizontal - diagonal - vertical - diagonal - horizontal - diagonal - vertical - diagonal...



**4+5** POINTS

## PUZZLE 7 - **POINTING AT THE TREASURE**

Put arrows in the grid, one arrow per cell at most, so that each arrow points at exactly one diamond and each diamond is pointed at by exactly one arrow. Arrows cannot touch each other, not even diagonally, and they also cannot touch the diamond that they are pointing at, not even diagonally (but they can touch other diamonds). An arrow cannot point at another arrow (not even through a diamond).



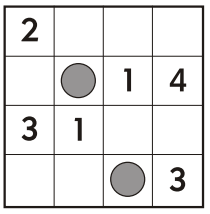
**14** POINTS

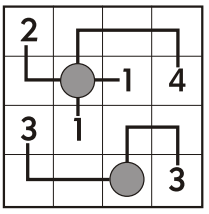
# PART 7 LINES & ARROWS - individual

October 5th, 9.30. - 10.30.

## PUZZLE 8 - **PIPES**

Connect each number in the grid with one gray circle, with a line that connects horizontally and vertically neighbouring cells. The lines cannot cross or overlap. Each number indicates the length of the line that connects that number with a circle. More than one number can be connected to the same circle. A line cannot pass through a cell with another number. All cells have to be used.

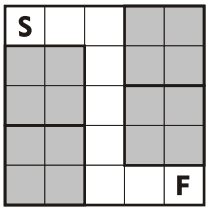


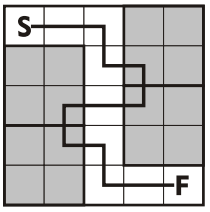




6 POINTS

## PUZZLE 9 - **PASS SQUARES**

Connect cells marked with S (start) and F (finish) with a line that connects horizontally and vertically neighbouring cells. The line can touch but it cannot cross or overlap itself. The line must pass through every 2x2 gray square but using only one of its four cells. The line doesn't have to pass through every white cell.

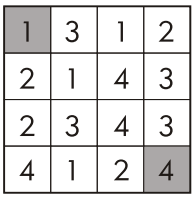


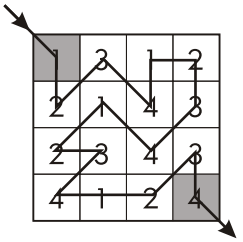




5 POINTS

## PUZZLE 10 - **ZIGZAG**

Draw a line that connets starting and ending cells (coloured gray), moving horizontally, vertically and diagonally and visiting every cell in the grid exactly once. The line cannot cross itself. Letters in cells along the line must spell C-R-O-A-T-I-A-C-R-O-A-T-I-A-C-R-O...

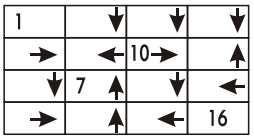


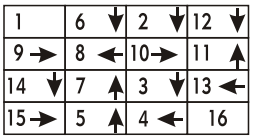




5 POINTS

## PUZZLE 11 - **ARROW MAZE**

Find a path through the maze by visiting every cell of the grid exactly once. Start with the cell with number 1, then write numbers in order in each cell you visit and finish in cell with number 36 (number 16 in the example). You can jump from one cell to another (not necessarily neighbouring cell) horizontally or vertically, but only in the direction of the arrow. Some numbers are already given.

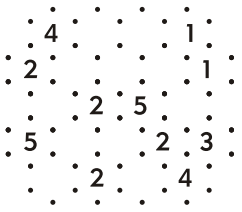


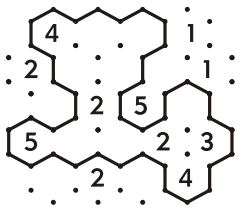




9 POINTS

## PUZZLE 12 - **HEXAGONAL FENCES**

Draw a single closed loop by connecting neighbouring dots in the grid (not all dots have to be used by the loop). The loop cannot touch, cross or overlap itself. Each number in the grid indicates how many of the six cell's borders are used by the loop.

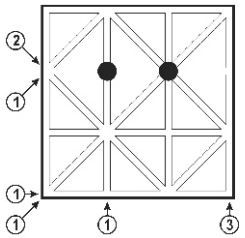


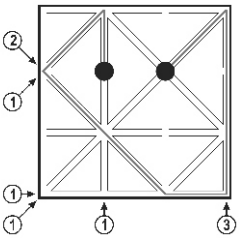




6 POINTS

## PUZZLE 13 - **STREETS**

Find a path through the maze that connects the two marked junctions (black circles). There can be only one fragment of the path at most on each straight line. Numbers around the grid indicate the length of the fragment in the direction indicated by the arrow. All fragments have their lengths shown. The path cannot cross itself.

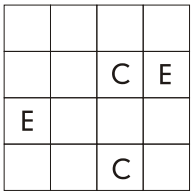


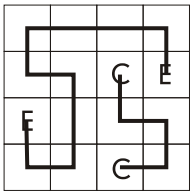




4+4+5 POINTS

## PUZZLE 14 - **ARUKONE**

Connect each pair of identical letters with a line that connects horizontally and vertically neighbouring cells. The lines cannot cross or overlap. Every cell of the grid must be used by a line.

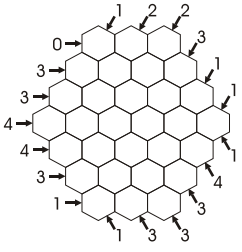


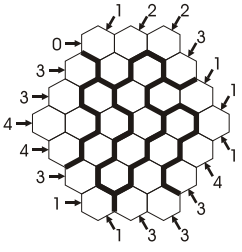




3 POINTS

## PUZZLE 15 - **BARRIERS**

Divide the grid along the grid lines into six different areas consisting of five cells each and differently shaped (rotated and mirrored shapes are considered the same). Numbers around the grid indicate how many walls cross the corresponding row/column indicated by the arrow.




5+10 POINTS

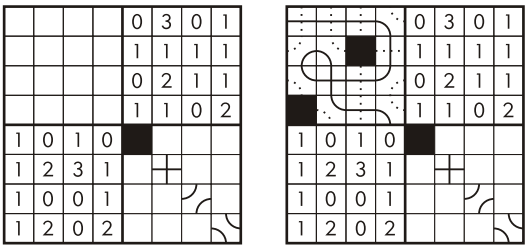
MAXIMUM **120** POINTS

# PART 8 ASSORTED PUZZLES - individual

October 5th, 10.45. - 11.45.

## PUZZLE 1 - **PIPELINE**

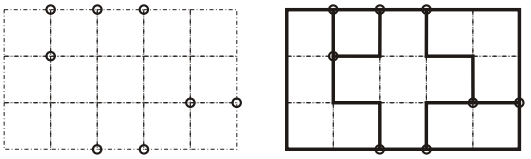
Reconstruct the layout of a pipeline scheme in the grid. Some of the cells in the grid are not used and have to be blackened. Pipes pass through all other cells, going in and out in one of the three possible ways (shown next to the grid) - pipes pass by each other or cross themselves (or each other). Numbers outside the grid indicate how many cells are not used and how many cells have to use each of the three pipe layouts in the corresponding row/column. There has to be exactly one pipe that enters the grid in upper left corner cell (through its upper or left edge), passes through all cells (except those blackened) and exits the grid in the bottom right corner cell (through its bottom or right edge). That pipe cannot pass through any cell twice, except if crossing itself.




**5+9** POINTS

## PUZZLE 2 - **RUSSIAN FIELD**

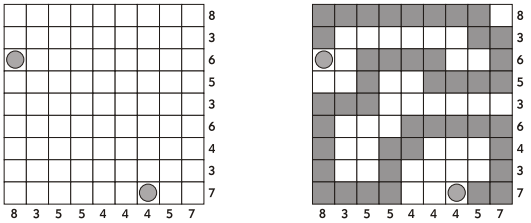
Divide the grid (along the grid lines) in n fields, different by size 1-n. All intersections where three segments of field borders meet are marked with circles in the grid. There are no intersections of four segments of field borders.



**4** POINTS

## PUZZLE 3 - **SNAKE**

Draw a single snake in the grid, 45 cells long, by connecting horizontlly and vertically neighbouring cells. The body of the snake cannot touch itself, not even diagonally. The snake's head and tail are marked. Numbers outside the grid indicate the number of cells used by the snake in the corresponding row/column.



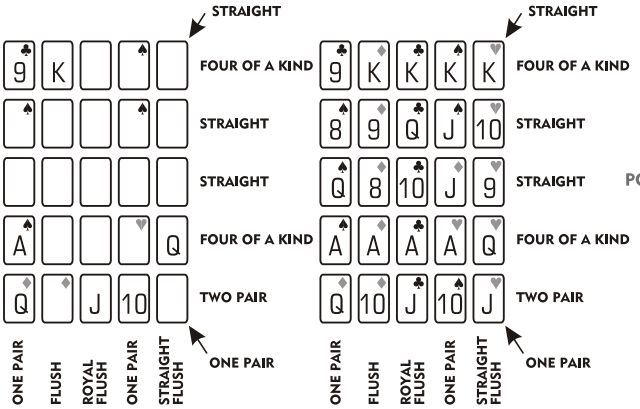

**5** POINTS

## PUZZLE 4 - **POKER**

Place 25 cards (out of the 28-card deck; cards used are 8, 9, 10, J, Q, K and A, in 4 different suits) in the grid, one card per cell, so that every row, column and diagonal contains the indicated combination of cards. Some cards and suits have already been placed.

You may use your own notation of suits, but if you do so, please indicate it in the deck grid (right of the puzzle grid).

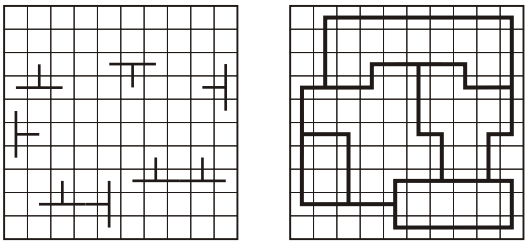
Possible card combinations: one pair (eg. KK), two pair (eg. QQAA), three of a kind (eg. 999), straight (eg. 910JQK, cannot be all same suit), flush (eg. ♠♠♠♠♠), full house (eg. KKK88), four of a kind (eg. AAAA), straight flush (eg. 8910JQ, all same suit) and royal flush (10JQKA, all same suit).




**10** POINTS

## PUZZLE 5 - **T-JUNCTIONS**

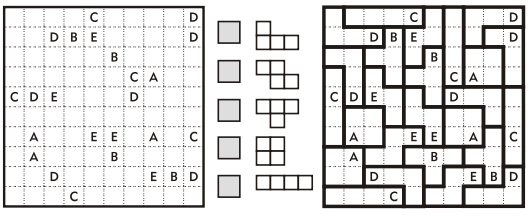
Draw lines in the grid by connecting horizontally and vertically neighbouring squares. Lines cannot touch each other, not even diagonally. All lines have to be interconnected and there cannot be any loose ends. T-junctions that are already drawn have to be part of the lines. All junctions are already placed and there is no + junction anywhere in the grid.



**3** POINTS

## PUZZLE 6 - **CODED TETRAMINO**

Divide the grid along the grid lines into tetraminoes (pieces of four horizontally and vertically connected squares). Each tetramino must contain exactly one letter. All the identical letters are located on the same type of tetramino. Tetraminoes can be rotated and mirrored.



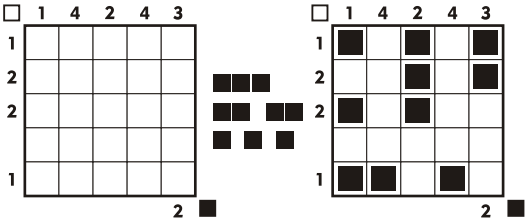
**3+8** POINTS

# PART 8 **ASSORTED PUZZLES - individual**

**October 5th, 10.45. - 11.45.**

## PUZZLE 7 - **SHIPS IN-FORMATION**

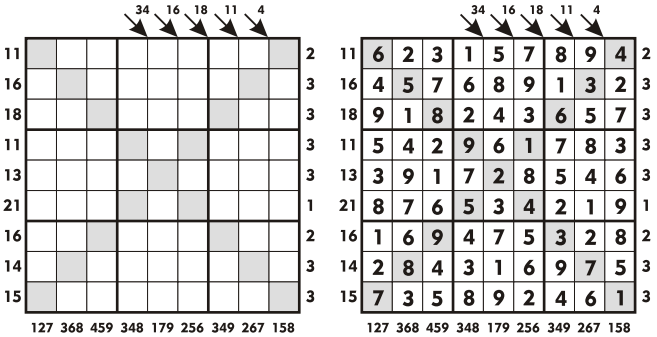
Locate the position of the fleet given next to the grid by painting some cells black. The ships are oriented horizontally or vertically. They do not touch each other, not even diagonally. Numbers below and to the right of the grid indicate the longest sequence of black cells (occupied by ships) in the corresponding row/column. Numbers above and to the left of the grid indicate the longest sequence of white cells (not occupied by ships) in the corresponding row/column.



**4+6** POINTS

## PUZZLE 8 - **ANDY'S SUDOKU**

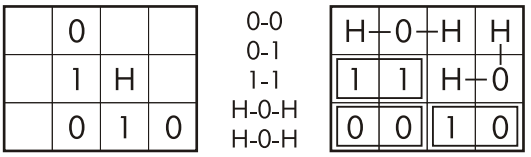
Place a digit from 1 to 9 into every empty cell in the grid so that each digit appears exactly once in every row, column, 3x3 box and two main diagonals. Numbers below the grid have to be placed in one of the first three cells in the corresponding direction. Numbers left of the grid indicate the sum of first three numbers in the corresponding direction. Numbers above the grid indicate the sum of all the numbers in the direction of the arrow. Numbers right of the grid indicate the number of visible skyscrapers in the corresponding direction (for that part cells in the grid are treated as skyscrapers, numbers represent their heights and higher skyscrapers hide the lower ones behind them).



**10** POINTS

## PUZZLE 9 - **DOMINOES IN THE WATER**

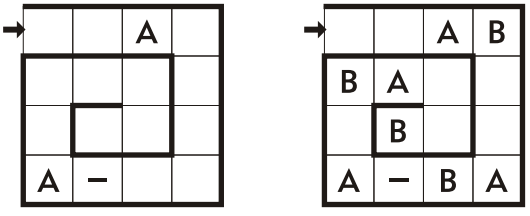
Write a digit 0-6 (0-1 in the example) or letter O or H in every empty cell of the grid. Then divide the grid along the grid lines into dominoes and molecules of water. All dominoes and molecules of water are given next to the grid. Dominoes can be oriented horizontally or vertically, while molecules of water are located in H-O-H sequence, lying horizontally, vertically or in L-shape. Two atoms of oxygen (letters O) cannot touch, not even diagonally. Any O already written in the grid can be a letter or a digit.




**14** POINTS

## PUZZLE 10 - **ABC SNAIL**

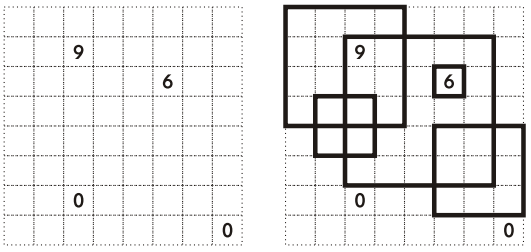
Write letters A, B and C (A and B in the example) into some cells of the grid so that there is one letter A, B and C in each row and column. Letters also have to be written in sequence A-B-C-A-B-C-A... (A-B-A-B-A-... in the example) starting from the entrance (indicated by the arrow) and going along the snail-like path to the center of the grid.



**3+6** POINTS

## PUZZLE 11 - **SQUARES**

Draw six squares with sides 1-6 (1-5 in the example) along the grid lines. Squares can cross each other but they cannot share corners or sides, not even partially. Numbers inside the grid indicate the sums of sides of squares covering the cell with the number.



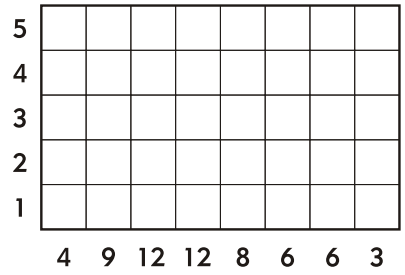
**6** POINTS

# PART 8 **ASSORTED PUZZLES - individual**

October 5th, 10.45. - 11.45.

## PUZZLE 12 - **NUMBERS & LETTERS**

Write numbers 1-10 (1-5 in the example), in the form of words indicated next to the grid, in the corresponding rows (marked with numbers to the left of the grid), one letter per cell. Words have to be written consecutively from left to right, with no empty cells between letters. First letter can be written in any cell of the row as long as the whole word fits in. Each number below the grid indicates the sum of all numbers that have a letter in the corresponding column.



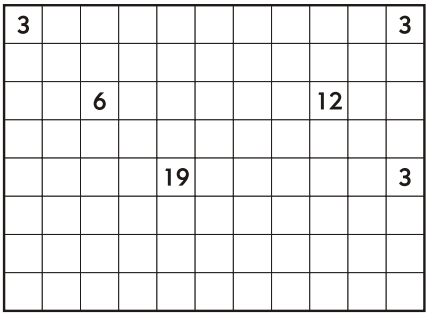

**5 - FIVE**
**4 - FOUR**
**3 - THREE**
**2 - TWO**
**1 - ONE**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5 | | F | I | V | E | | | |
| 4 | F | O | U | R | | | | |
| 3 | | | T | H | R | E | E | |
| 2 | | | | | | T | W | O |
| 1 | | | | | | O | N | E |
| | 4 | 9 | 12 | 12 | 8 | 6 | 6 | 3 |

**7** POINTS

## PUZZLE 13 - **ISLANDS IN SCRABBLE**

Place all the listed words (Croatian islands) in the grid as in a classic scrabble puzzle - horizontally (from left to right) or vertically (top to bottom); one letter per cell; all words are interconnected; there cannot appear any words (not even 2-letter) that are not on the list. Words cannot cross cells with numbers. All the remaining cells, not used by words, are considered as islands in scrabble. Each island (a group of horizontally and vertically connected cells unused by words) has to contain one number already written in the grid which indicates the island's size in cells. Islands can touch diagonally.



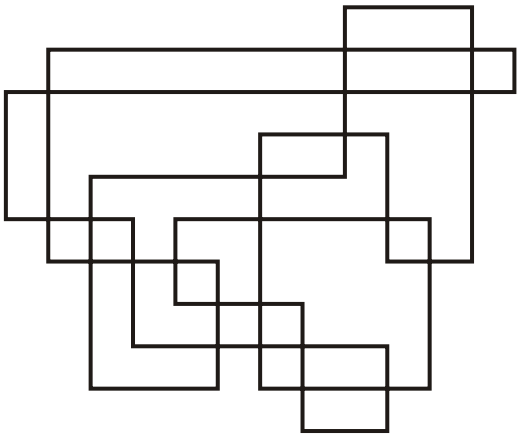

- ☐ GOMILICA
- ☐ KAMBELOVAC
- ☐ LUKŠIĆ
- ☐ NOVI
- ☐ STARI
- ☐ SUĆURAC
- ☐ ŠTAFILIĆ

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | | | L | | | | | | G | 3 |
| S | U | Ć | U | R | A | C | | | O | |
| | | 6 | K | | | | | 12 | M | |
| | | | Š | T | A | F | I | L | I | Ć |
| N | O | V | I | 19 | | | | | L | 3 |
| | | | Ć | | S | T | A | R | I | |
| | | | | | | | | | C | |
| | K | A | M | B | E | L | O | V | A | C |

**11** POINTS

## PUZZLE 14 - **COUNT THE RECTANGLES**

How many rectangles are there in the picture?
**Partial points:** 3 points for correct answer plus/minus 1!



**Answer:**
**29**

**6** POINTS

MAXIMUM **120** POINTS

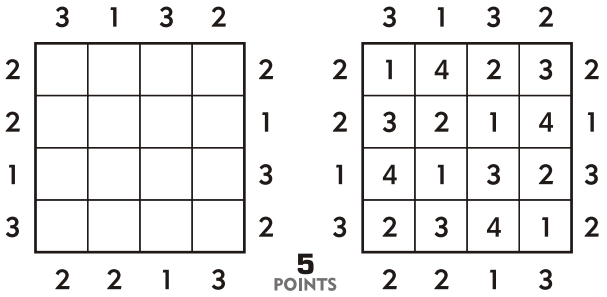
# PART 9 METROPOLIS - individual

October 5th, 12.00. - 12.30.

In this part all of the puzzles are based on the classsic rules for skyscrapers, with some addition or change.

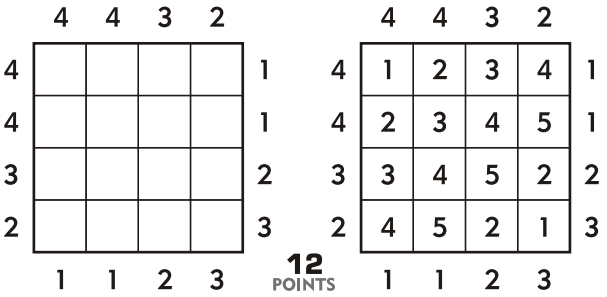
Place numbers (representing skyscrapers) 1-n in the grid, so that no number is repeated in any row or column. Each number indicates the height of the skyscraper and the higher ones hide the smaller ones behind them. Numbers outside the grid indicate how many skyscrapers are visible from the corresponding direction.

**1. LONDON**
Classic skyscrapers puzzle with numbers 1-6.



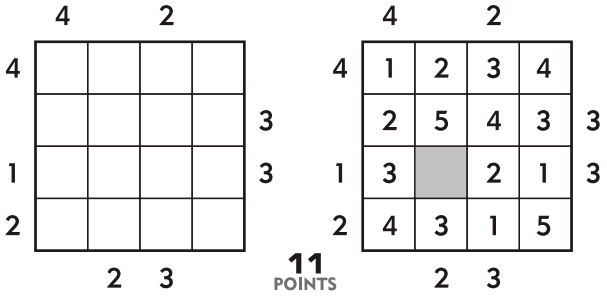

5 POINTS

**2. DUBAI**
Fill the 6x6 grid with skyscrapers 1-7.



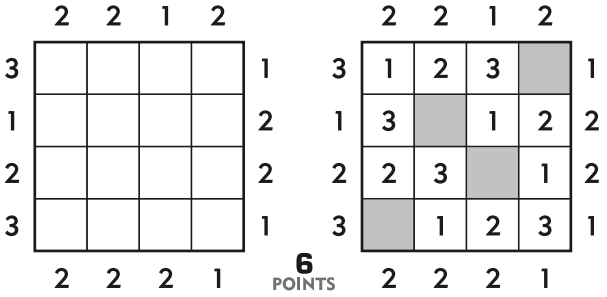

12 POINTS

**3. NEW YORK**
Fill the 6x6 grid with skyscrapers 1-7. Exactly one cell in the grid has to remain empty.



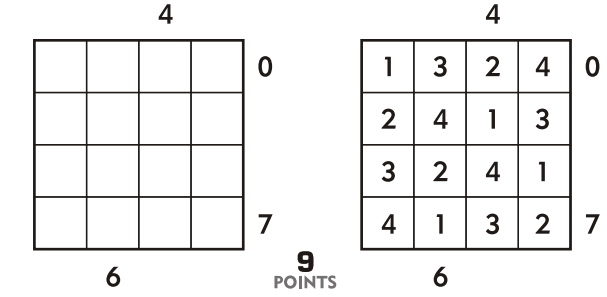

11 POINTS

**4. TORONTO**
Fill the 6x6 grid with skyscrapers 1-5. Exactly one cell has to remain empty in each row and column.



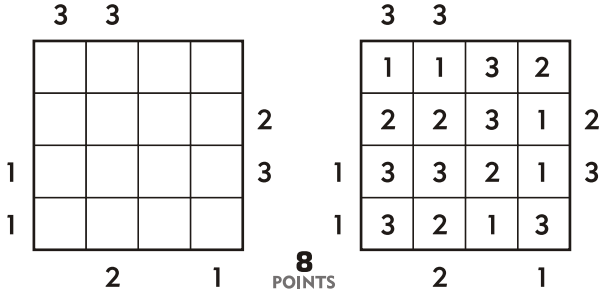

6 POINTS

**5. SYDNEY**
Numbers outside the grid represent the sum of all visible skyscrapers except the first in the corresponding direction.



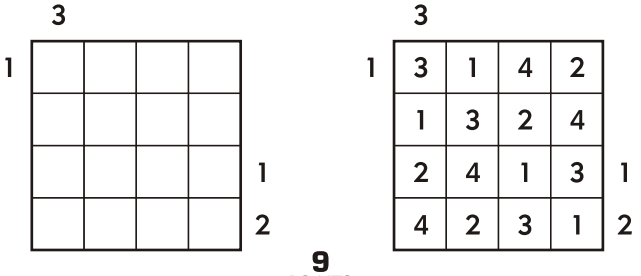

9 POINTS

**6. TOKYO**
Fill the 6x6 grid with skyscrapers 1-5. One number is repeated in each row and column.




8 POINTS

**7. SAO PAULO**
Numbers outside the grid represent the sum of all invisible skyscrapers placed in between the visible ones.




9 POINTS

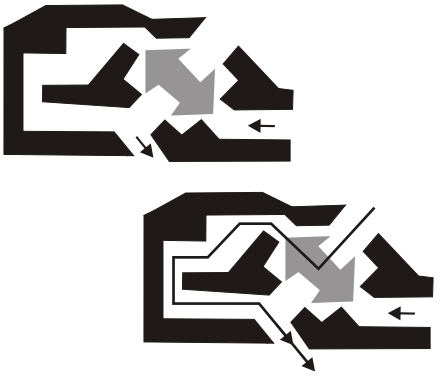
MAXIMUM 60 POINTS
+ORDER BONUS

# PART 10 ANTHOLOGY - individual

October 5th, 14.30. - 16.00.

## PUZZLE 1 - THIS WAY AND THAT

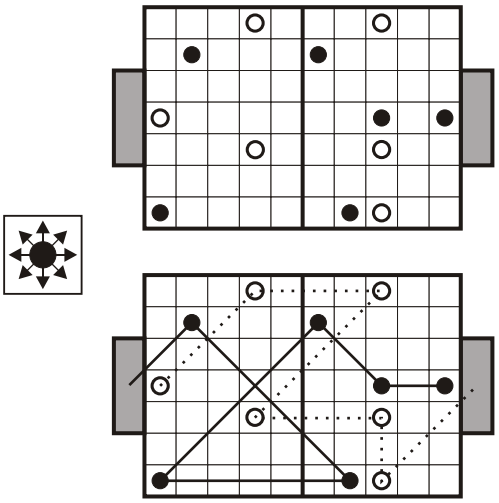
Find a path that enters the maze at one entrance/exit, passes through all the big arrows and exits the maze at a different entrace/exit, without using any part of the maze more than once. You may enter and exit the maze only once. Parts of the maze with big arrows have streets entering from four directions. Your path must enter from one of the two directions that the arrow is not pointing at, then follow one of the two directions that the arrow is pointing at. You cannot go around a big arrow without touching and entering it. Small arrows in the maze indicate one way streets in the maze. You do not have to pass through every street and every small arrow.



**2 POINTS**

## PUZZLE 2 - FOOTBALL

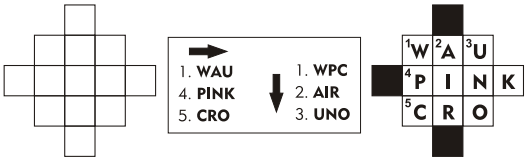
The grid represents a football (soccer) field. White circles represent players of the white team (attacking from left to right) and black circles represent players of the black team (attacking from right to left). Score two goals by drawing two lines (one for the white team, the other for the black team) that start from the goalkeeper (the player closest to his own goal), visit each player in the team and end up in the opponents' goal (gray areas of the field on the right and left edge) , the last player being the scorer of the goal. One player can pass the ball to his teammate in one of the 8 directions, horizontally, vertically or diagonally. The path of the ball must change direction in every circle and it cannot be intercepted by an opponents' player (i.e. the path between two white circles cannot cross a black circle, and vice versa). Each player can have only one contact with the ball. The lines can cross themselves and each other multiple times.



**3 POINTS**

## PUZZLE 3 - RECONSTRUCT THE CROSSWORD

Reconstruct a crossword in the grid using the listed words and standard ways of numeration. The crossword does not necessarily occupy the whole grid.

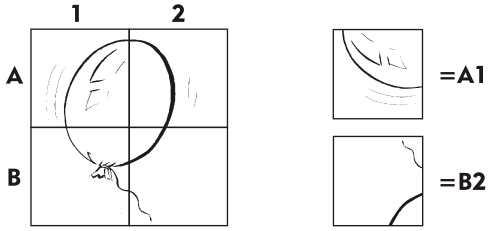



**5 POINTS**

## PUZZLE 4 - DRAWING PARTS

Find coordinates of the seven fragments (two in the example) in the large picture. The fragments can be rotated but not mirrored.

**Partial points:** 1 point is given for every 2 correct coordinates, 4 points for the complete solution.




**4 POINTS**

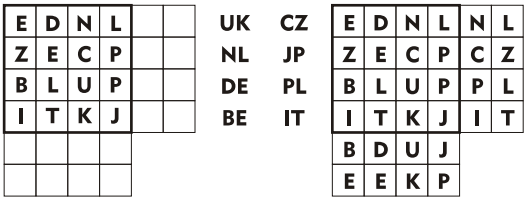
## PUZZLE 5 - WORDS ACROSS ISTRIA

Place all the listed words (names of places on the Istria peninsula) in the grid. The grid already contains one letter from each name and that letter can be used for this name only. Each name crosses with at least one other name and all names are interconnected. Words that are not on the list cannot appear anywhere in the grid (not even two-letter words).


**17 POINTS**

## PUZZLE 6 - WPC CHAMPIONS

Write each name and surname of the former wpc champions next to some rows and below some columns of the grid so that all the leters of each name/surname can be found in the corresponding row/column. Each letter in the grid belongs to only one name or surname. Some rows and/or columns are not used by any name/surname (all rows and columns are used in the example).



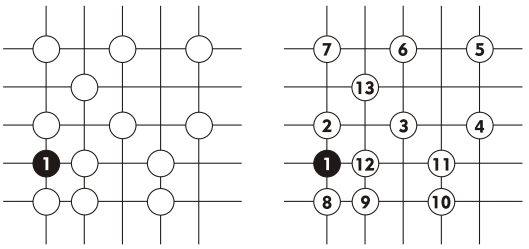

**14 POINTS**

# PART 10 **ANTHOLOGY - individual**

October 5th, 14.30. - 16.00.

## PUZZLE 7 - **HIROIMONO**

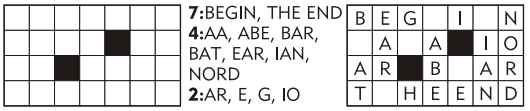
Visit all circles in the grid (i.e. pick up all of the white stones) by moving horizontally and vertically along the grid lines. Start from the black stone (circle) with number one, and numerate the stones in order you visit them. You can change direction only when you pick up a stone, or you can continue straight but you cannot turn back. Each time you come across a new stone (not yet numerated) you have to pick it up (and numerate it). Each time you come across a numerated stone you have to carry on straight because this stone is already picked up.



**4** POINTS

## PUZZLE 8 - **JUMPING CROSSWORD**

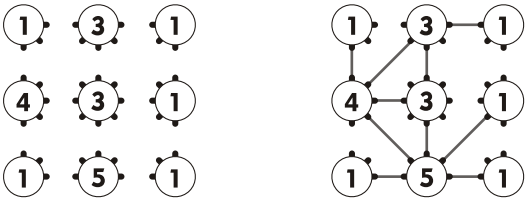
Place all the listed words in the grid, horizontally or vertically, one letter per cell at most. Some cells must remain empty. Empty cells can touch only diagonally. Numbered lists of words include empty cells in the grid.




**18** POINTS

## PUZZLE 9 - **SPOKES**

Draw some lines in the grid that connect neighbouring circles, horizontally, vertically and diagonally. Each number in a circle indicates the number of lines going from that circle. All circles are interconnected and the lines cannot cross.



**2** POINTS

## PUZZLE 10 - **STAR TREK**

Place a name of a star into each cell so that the indicated distances (listed below the chart) are true (it's enough to write the first letter of each star). Be careful: count the distances between the stars, not the stars.


**16** POINTS

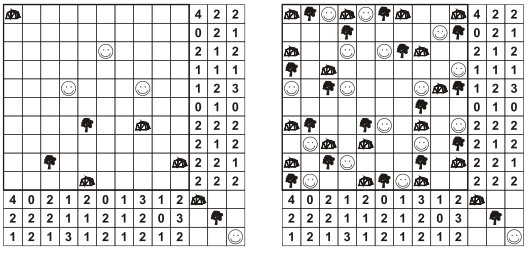
## PUZZLE 11 - **DIG IT?**

Draw nine digits from 0 to 9 (one of them is not used; 0-4 in the example), in digital form represented next to the grid, by connecting horizontally and vertically neighbouring dots. Digits cannot touch each other, not even diagonally. Digits cannot be rotated and/or mirrored. Numbers next to the grid indicate how many lines cross the corresponding row/column. Any line already drawn must be a part of a digit.


**10** POINTS

## PUZZLE 12 - **TENTS TREES AND DOGS**

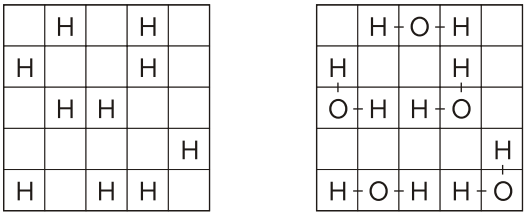
Locate triplets (tent-tree-dog sequences) in the grid. A sequence can be horizontal, vertical or L-shaped, but the tree is always in the middle. Identical symbols cannot touch each other, not even diagonally. The numbers outside the grid indicate the number of tents, trees and dogs respectively, in the corresponding row/column.



**9** POINTS

## PUZZLE 13 - **$H_2O$**

There are 20 molecules (5 in the example) of water (H2O) in the grid, consisting of two atoms of hydrogen (H) and one atom of oxygen (O) each. Locate 20 atoms (5 in the example) of oxygen (one per cell at most) so that no two atoms of oxygen touch each other, not even diagonally. Atoms are connected in H-O-H sequence horizontally, vertically or in L-shape. Every atom of hydrogen belongs to a different molecule of water. All atoms are used.



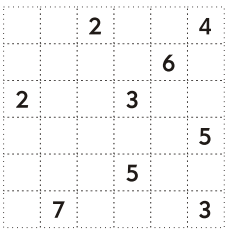
**6** POINTS

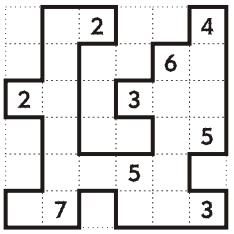
# PART 10 ANTHOLOGY - individual

October 5th, 14.30. - 16.00.

## PUZZLE 14 - **CAVE**

Draw a single closed loop, going along the grid lines. The loop cannot touch or cross itself. The area enclosed by the loop represents a cave. All numbers written in the grid must be inside the cave. A number in a grid cell indicates how many cells (including the cell with that number) can be seen from that cell to the nearest wall in four directions, horizontally and vertically.

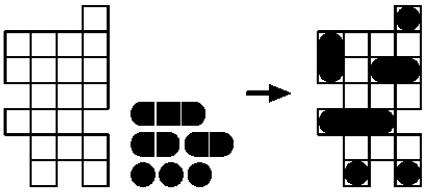




**16** POINTS

## PUZZLE 15 - **BATTLESHIPS POOL**

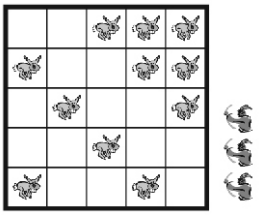
Locate the position of the given fleet in the grid. Ships are oriented horizontally or vertically and they cannot touch each other, not even diagonally. Cells marked with water cannot contain any part of a ship.

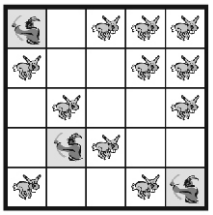


**6** POINTS

## PUZZLE 16 - **HUNTERS**

Locate hunters in the grid (one hunter per cell) so that they can hunt all the animals. Each hunter shoots and captures all animals up to three squares away in eight directions, horizontally, vertically and diagonally. Each animal has to be captured by only one hunter. No hunter can be within reach of another hunter. The number of hunters is given next to the grid.

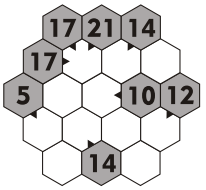


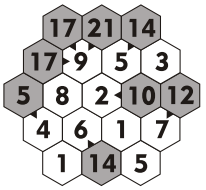


**4** POINTS

## PUZZLE 17 - **HEXAKURO**

Place a digit 1-9 into every empty cell of the grid so that no digit is repeated in any consecutive sequence of digits (in any of the three directions). Numbers in gray cells indicate the sum of digits in the directon of the arrow, up to another gray cell or the edge of the grid.

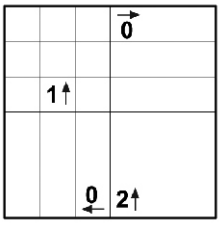


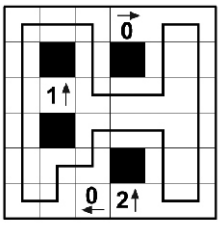


**14** POINTS

## PUZZLE 18 - **YAJILIN**

Paint some cells in the grid black so that each arrow points to the number of black cells given next to that arrow. Black cells can only touch diagonally. Draw a single closed loop (which cannot cross or overlap itself) by connecting centers of all remaining white cells, going horizontally and vertically. Cells with arrows cannot be a part of the loop.

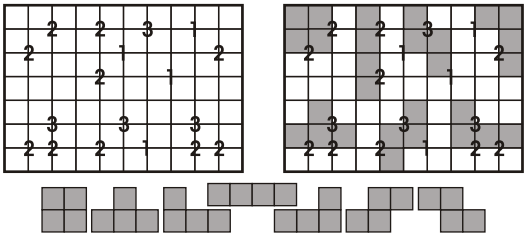




**4** POINTS

## PUZZLE 19 - **TETRASCOPE**

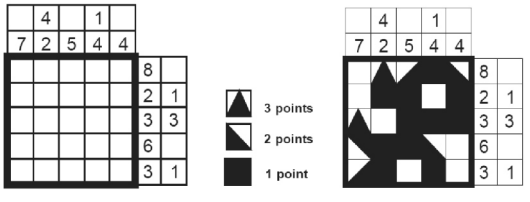
Paint some cells in the grid black to form the given set of tetraminoes. Tetraminoes can be rotated but not mirrored and they cannot touch each other, not even diagonally. Each tetramino must be used exactly once. Numbers in the grid indicate how many of the four neighbouring cells are used by tetraminoes.



**6** POINTS

## PUZZLE 20 - **JAPANESE NUMBER CASTLE**

Build a single connected castle from the given building blocks, according to the following rules. Right triangles (worth 2 points) have both their legs either connected to other building blocks or stand on the ground. Right triangles may be rotated in any possible way, while equilateral triangles (worth 3 points) can only be built in as roofs, i.e. fully supported from below (they do not support upwards). Numbers outside the grid indicate block groups in the corresponding row/column and the value of each such block. Two blocks are separated by at least one completely empty cell.




**20** POINTS

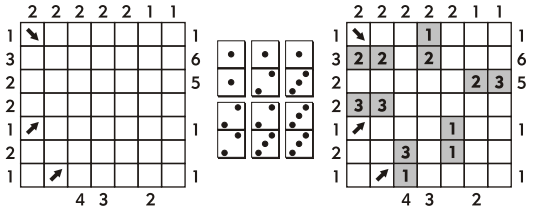
MAXIMUM **180** POINTS

# PART 11 SOMETHING NEWISH - individual

October 5th, 16.15. - 17.15.

## PUZZLE 1 - DOMINO ARROWS

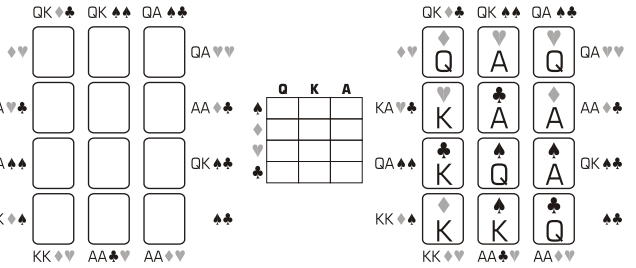
Place a complete domino set (given next to the grid) in the grid so that no two dominoes touch each other, not even diagonally. Each arrow in the grid points at exactly three different dominoes and each domino tile in the grid is pointed at by only one arrow. Numbers above and on the left indicate how many cells are occupied by dominoes in the corresponding row/column. Numbers below and on the right indicate the sum of numbers in the corresponding row/column.



**19 POINTS**

## PUZZLE 2 - NEIGHBOUR CARDS

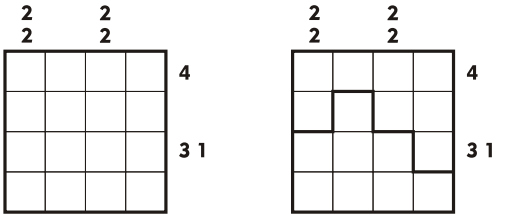
Place 20 cards (12 in the example) - 10, J, Q, K, A in all four suits - in the grid using the information around the grid, which indicate which cards and suits must be neighbouring in the corresponding row/column. A pair of information about cards and suits given on the same side of a row/column doesn't necessarily indicate the same two cards in the grid.



**11+21 POINTS**

## PUZZLE 3 - FARMS

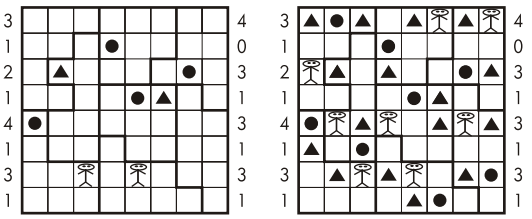
Divide the grid along the grid lines in 10 farms (2 in the example) of the same size but different shape. Rotated and mirrored shapes are considered the same. Numbers outside the grid indicate the size of sequences of connected cells (belonging to the same farm) in the order they appear in the corresponding row/column.



**4 POINTS**

## PUZZLE 4 - RURAL TOURISM

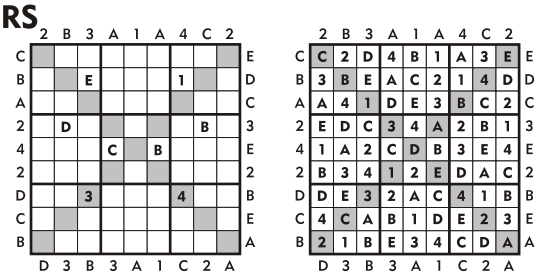
There are 10 (8 in the xample) farms (areas with thick borders) in the grid. Locate 2 houses, 1 well and 1 farmer (some symbols are already given) on each farm so that there are also 2 houses, 1 well and 1 farmer in each column. A well must be adjacent to at least one house on its farm. Two houses from different farms cannot touch, not even diagonally. The same goes for two wells and for two farmers. Two houses on the same farm can be adjacent. Numbers on the right indicate the number of houses in the corresponding row, while numbers on the left indicate the combined number of wells and farmers in the corresponding row.



**15 POINTS**

## PUZZLE 5 - EASY AS ABC SUDOKU SKYSCRAPERS

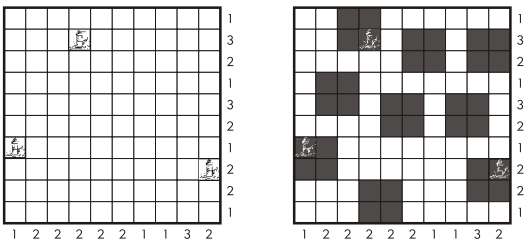
Fill in the grid with letters A, B, C, D and E and numbers 1, 2, 3, and 4, so that each row, column, main diagonal and 3x3 box contains nine different symbols. Numbers in the grid represent skyscrapers of height 1 - 4. Numbers outside the grid indicate how many skyscrapers can be seen in the corresponding row/column, as in a classic skyscrapers puzzle (higher buildings hiding the lower ones). Letters in the grid do not affect the visibility of skyscrapers. Letters outside the grid indicate which letter can be seen first in the corresponding row/column, as in a classic easy as ABC puzzle. Numbers in the grid do not affect the visibility of letters.



**28 POINTS**

## PUZZLE 6 - CLIFFS

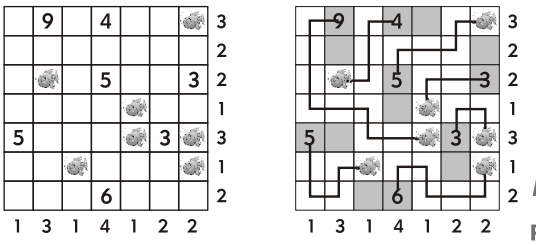
The grid represents a part of the sea in which you have to locate cliffs of size 2x2 cells. Cliffs cannot touch each other, not even diagonally. Lighthouses drawn in the grid must be located on the cliffs. Numbers outside the grid indicate the number of cliffs in the corresponding row/column.



**5+5 POINTS**

## PUZZLE 7 - FISHERMEN

Place boats (rectangles of size 1x2 cells) in the grid so that no two boats touch each other, not even diagonally. Each boat has to contain a number which represents a fisherman (all numbers are already written). Draw a line starting from each fisherman so that each fisherman catches a different fish with a line whose length is indicated by the fisherman's number. The lines cannot cross boats and they cannot cross or overlap each other. Numbers outside the grid indicate how many cells are occupied by boats in the correspoding row/column. Every cell in the grid has to be used.



**12 POINTS**

**MAXIMUM 120 POINTS**

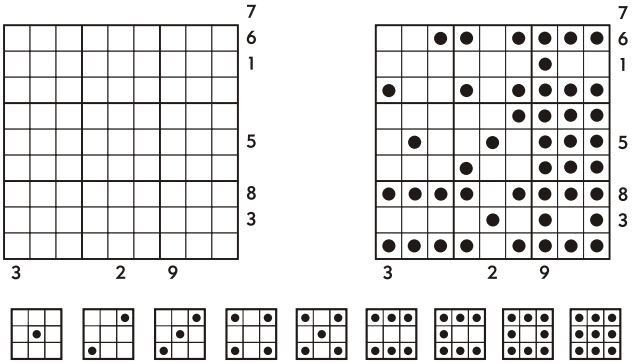
## PART 12 **HALF DOMINOES - individual**

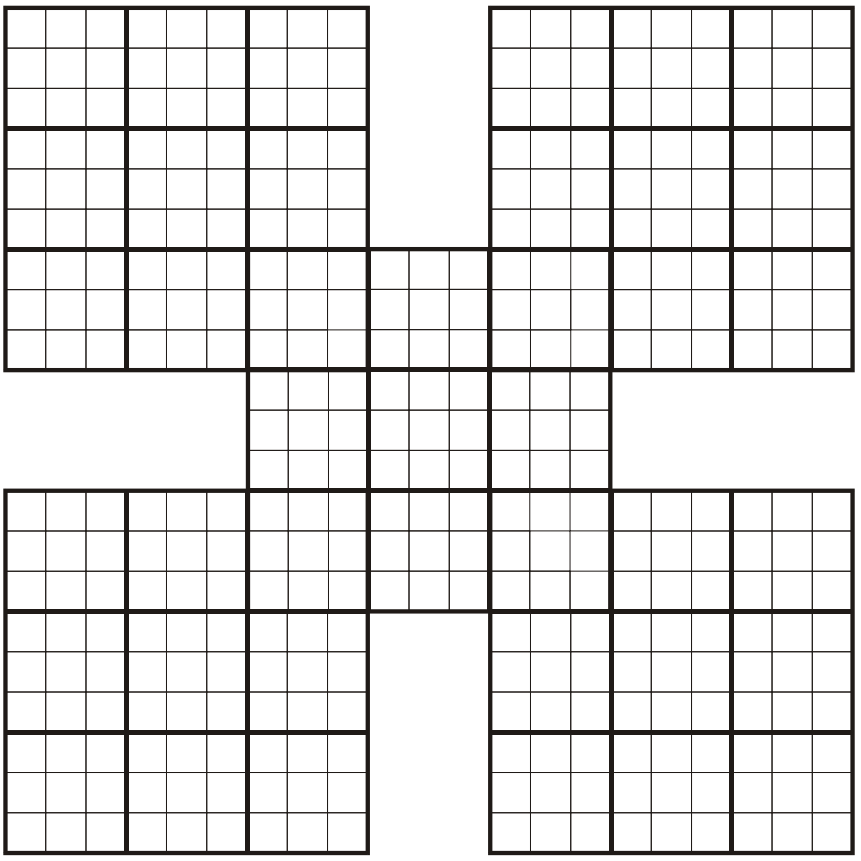
October 5th, 17.30. - 18.20.

Put the half dominoes into the grid so that every row, column, 3x3 large square (consisting of 81 small squares) and the two main diagonals contain only different half dominoes. Numbers outside the grid indicate the number of dots in the corresponding row/column/diagonal. Half dominoes cannot be rotated or mirrored and they cannot overlap.

**Partial points:** 20 points for every correctly solved 3x3 large square, 2 points for every correctly solved half domino in an incompletely solved square.

**Example:**



MAXIMUM 100 POINTS

## PART 13 **MESSED UP LINK - team**

**October 5th, 19.00. - 19.45.**

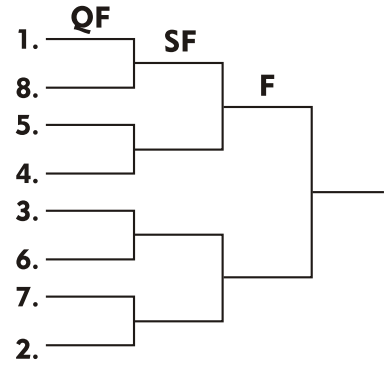
Unfortunately, all the instructions for this part were lost. The teams will have to find a solution without them. There will be 21 puzzles in the set and there will be an example next to each of them, but no written instructions. All of them will be well known types of puzzles or variations of common types. They will be printed on separate sheets of paper so that the team members can divide them among themselves.

MAXIMUM
**400**
POINTS
**+ORDER BONUS**

# INDIVIDUAL PLAYOFFS

**October 6th, 10.00. - 13.00.**

The top 8 official competitors after 11 individual parts in the 21st World Puzzle Championship will participate in the playoffs held on billboards in front of the audience.
They will compete 1 against 1 in several rounds according to the next scheme:




**QF** - quarterfinal
**SF** - semifinal
**F** - final

Each pair of competitors will solve one puzzle at a time, until one of them correctly solves it and gets one point. Then they will solve the next puzzle etc.
In quarterfinals, semifinals and in the bronze medal match, the winner will be the first competitor to get two points.
In the gold medal match the winner will be the first competitor to get three points.

There will be a puzzle pool consisting of 27 puzzles of different types.

All puzzle types in the playoffs will be the ones already used in puzzle parts 1-13 in the championship. Their complete list will be known before the start of the championship.
The higher ranked competitors from previous rounds will not have the time advantage but they will have the advantage of choosing the puzzles from the pool for their matches.
Before the beginning of the quarterfinal matches, competitors will choose puzzles from the puzzle pool according to their ranking - the first 4 ranked competitors will choose 2 puzzles each, starting from the competitor no.1 on. Then, competitors ranked 5-8 will choose 1 puzzle each, also starting from the highest ranked competitor on.
After the puzzle selection, quarterfinal matches will take place in the order shown in the scheme (first match 1-8, then 5-4, etc.).
The first puzzle in each match will be a puzzle selected by the higher ranked competitor. The second one will be the lower ranked competitor's choice. If the match is tied after two puzzles, the third puzzle (selected by the higher ranked competitor) will decide the winner.
If a competitor wins a match 2:0, the third, unused, puzzle will be returned to the puzzle pool and can be selected again in any of the next rounds (semifinal or final).
After the quarterfinal round, the winners will again start the selection of puzzles for the semifinals in a similar way as in the quarterfinals. First, the highest ranked competitor will choose 2 puzzles, then the second highest ranked competitor will choose 1 (if he/she plays against the higher ranked competitor) or 2 puzzles (if he/she plays against a lower ranked competitor), then the third ranked competitor will also choose 1 or 2 puzzles, and finally the lowest ranked competitor will choose 1 puzzle.
When puzzles are selected, semifinal matches will be played in the same way as the quarterfinals.
Unused puzzles will be returned to the puzzle pool to be available for the bronze and gold medal match puzzle selection.
The puzzle selection for the gold and bronze medal match will be conducted as follows: first, the higher ranked finalist will choose 3 puzzles, then the lower ranked finalist will choose 2 puzzles, then the higher ranked bronze medal match competitor will choose 2 puzzles, and finally the lower ranked bronze medal match competitor will choose 1 puzzle.
After the final puzzle selection is complete, the bronze medal match will take place in the same way as quarterfinals and semifinals.
The last match of the day, which will decide the puzzle champion for 2012, will be conducted in a similar way - the 1st, 3rd and 5th (if needed) puzzle will be the choice of the higher ranked competitor and the 2nd and 4th (if needed) will be the choice of the lower ranked competitor.

Puzzles in the playoffs will be checked by the judges standing next to the competitors on the stage. When a competitor finishes solving his/her puzzle, he/she needs to raise his/her hand and clearly state that he/she has finished. At that moment the judge will note the exact time of submission on the billboard and check the solution. If the solution is correct the judge will notify the competitor that he/she has won a point and stop the other competitor. If the solution is not correct the judge will wait until precisely one minute has passed and then the competitor can continue solving the puzzle. There will be no other penalties for incorrect solutions. During one minute of checking the competitor is not allowed to leave the stage or to look at other competitor's puzzle or to talk to anybody in the audience. He/she is also not allowed to look at his/her puzzle or the judge while checking the solution. There will be more judges making sure all the rules are strictly obeyed.