

# Instruction Booklet for the 20<sup>th</sup> World Puzzle Championship

**6<sup>th</sup> World Sudoku  
Championship**  
6-10 November 2011



**20<sup>th</sup> World Puzzle  
Championship**  
8-13 November 2011

## PART 1-16

**10-12 November,**  
Thursday–Saturday

**Total solving time**  
574 + 160 minutes

Maximum score:  
**???? points**

## 20<sup>th</sup> WPC

|                      |             |
|----------------------|-------------|
| In memoriam          | 09:20–09:50 |
| Assorted puzzles     | 10:00–11:00 |
| Cows                 | 11:10–12:00 |
| Borderless           | 13:50–14:20 |
| Evergreens           | 14:30–15:40 |
| Board games (TEAM)   | 16:30–17:10 |
| Naval puzzles (TEAM) | 17:30–18:30 |

|                    |             |
|--------------------|-------------|
| Screentest         | 09:00–09:30 |
| Sprint             | 09:45–10:15 |
| Divide and conquer | 10:30–11:00 |
| Magic 11           | 11:11–11:55 |
| Hungaricum         | 13:30–14:50 |
| Innovatives        | 15:00–16:00 |
| Best of            | 17:20–18:20 |

|                       |             |
|-----------------------|-------------|
| Wrong puzzles! (TEAM) | 09:00–10:00 |
| Playoff               | 11:00–12:00 |

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## General scoring rules for WPC

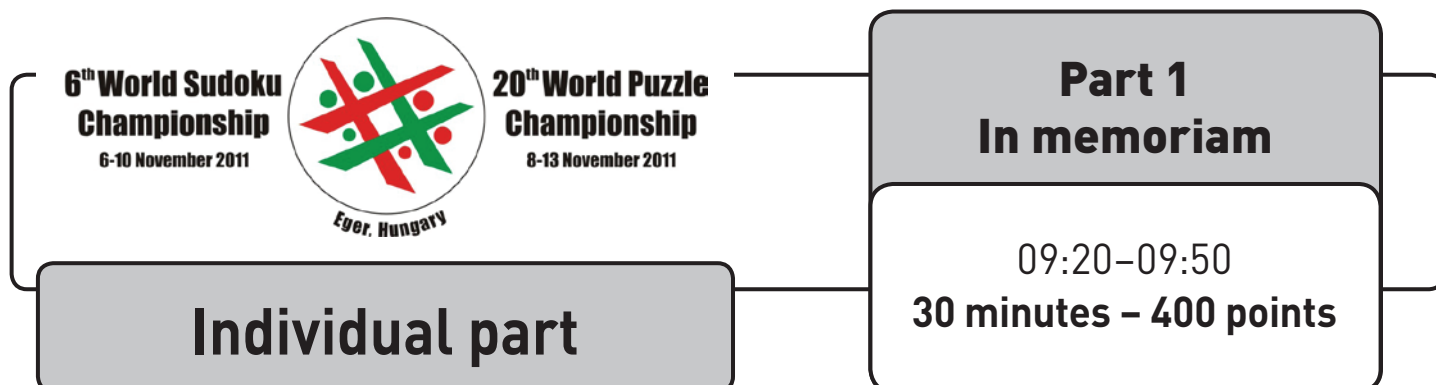
Partial scores are not generally available for puzzles, unless explicitly stated otherwise. That is, if a puzzle is marked correct, the full score is awarded, otherwise no points are scored.

### Round Bonus

For individual and team rounds, a competitor or team can earn a bonus if they complete all the puzzles in the round before the time limit. The competitor declares by raising his or her hand to get the attention of a floor judge, who will write the time on the scoring cover sheet. For individual rounds, the full bonus is 5 points for each full minute early

(for example, 50 seconds early would not get any bonus). For team rounds, the full bonus is 30 points for each full minute early. To get the full bonus, all puzzles must be perfectly solved.

If, in the opinion of the judge, the individual or team intended to submit a perfect round, but there is a small number of errors, the round could be considered "near-perfect" and the individual or team would be awarded 60% of the full bonus. In general, a round would be near-perfect if each puzzle in the round was at least 95% correct, in the opinion of the judge.



It is with great sadness that we commemorate some of the great people, having passed away recently, who in their lives had made a great contribution to the world of puzzles, in particular to the previous WPC that was hosted in Eger, Hungary, in 2005. In alphabetical order:

**Sándor G. Elekes** (*Hungary*), author of Coins, Streets and Fifty-Fifty puzzles, among others, for WPC 2005

**Glynn Ridley** (*UK*), author of Russian Number Puzzle, Square Number Crossword and Common Digits puzzles for WPC 2005

**László Tiszai** (*Hungary*), honorary President of Hungarian Puzzlers' Association, former editor-in-chief of Fűles

**Zoltán Végh** (*Slovakia*), author of Paint in Triangles puzzle for WPC 2005

This round is dedicated to the memory of these people, with all the puzzles having a connection to their work.

**There will be a short memorial before starting the first round at 09:00, so we kindly ask everyone to take his/her place in the competition hall before 09:00.**

### Puzzle 1

#### Honey Seven

Fill in the grid using digits 1 through 7 so that the neighbours of each white hexagon are all different. Neighbours of a black square do not need to be all different.

**75**  
points

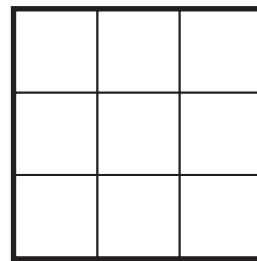


### Puzzle 2 - Coins

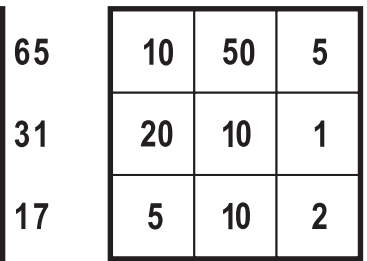
Place a coin into each square of the grid. Numbers around the grid reveal the sum of the coin amounts in the given row or column. Possible coin denominations are: 50, 20, 10, 5, 2, 1. You can use as many of each denomination as you like (but only one coin into each square).

**15**  
points

**30**  
points



35 70 8



65 65  
31 31  
17 17  
35 70 8

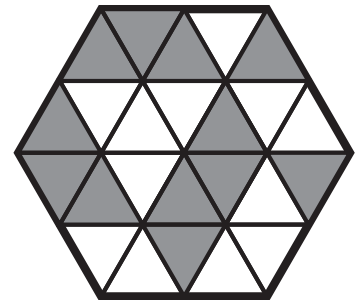
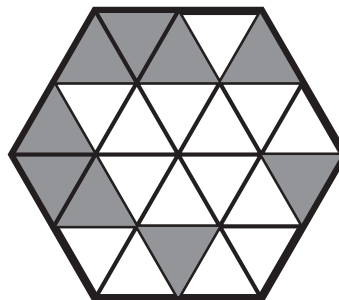
### Puzzle 3 - Fifty-fifty

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

**10**  
points

**20**  
points

**25**  
points

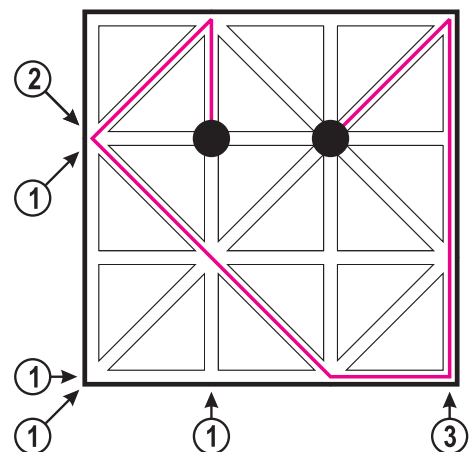
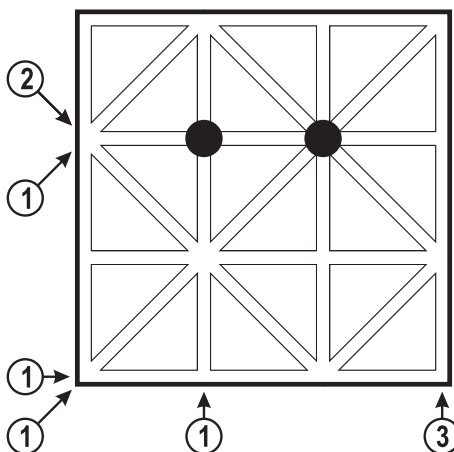


### Puzzle 4 - Streets

Find a path in each maze that connects the two marked junctions. No two fragments of the path may be along the same straight. Numbers around the grid reveal the length of the fragment in the direction indicated. All fragment has its length shown.

**25**  
points

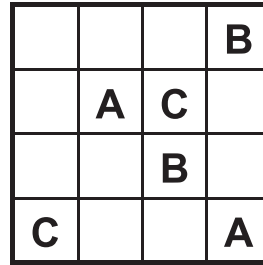
**30**  
points



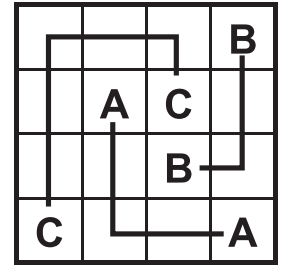
### Puzzle 5 - ABC-connection

Connect the identical letters with lines that are only horizontal and vertical and always connect the centers of adjacent squares.

**10**  
points



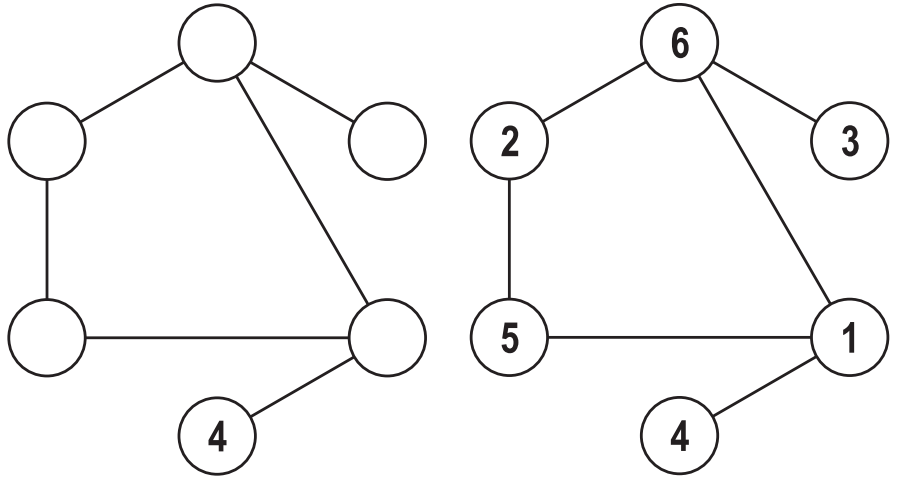
**10**  
points



### Puzzle 6

#### Russian number puzzle

Write numbers 1-12 (1-15 in the second puzzle) into the circles so that numbers in neighbouring circles differ by at least four (six in the second puzzle). In the example numbers 1-6 are used and the smallest difference is 3.



**20**  
points

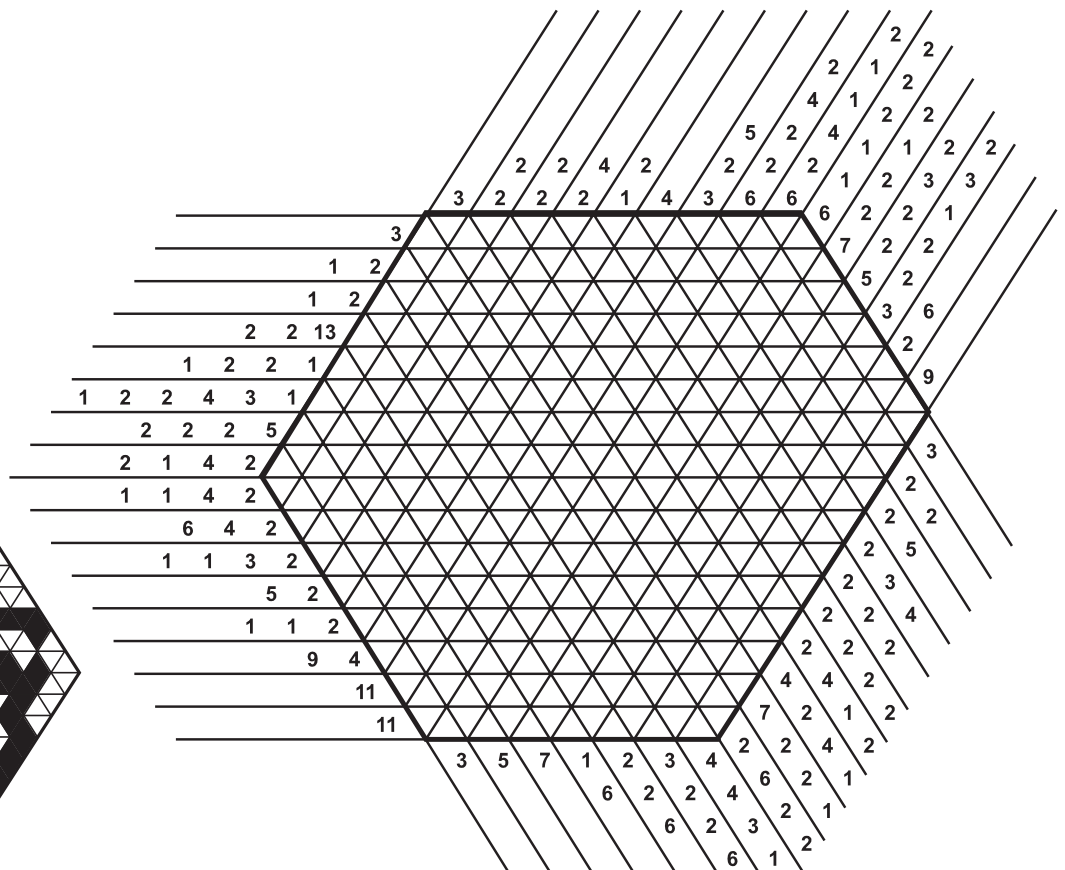
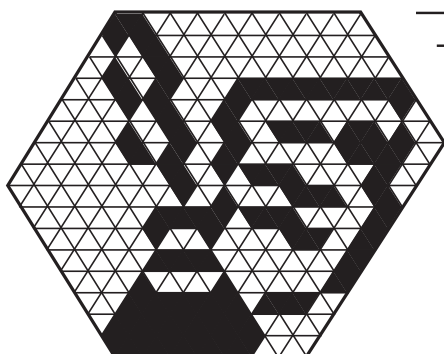
**50**  
points

### Puzzle 7

#### Paint in triangles

This puzzle is a variation of the Paint it black! puzzle. In this puzzle the information are given from three directions. The numbers tell you how many black section must be in that direction, and how long they are. Before and after the black section there can be several empty triangles, but between two black sections there must be at least one.

**80**  
points





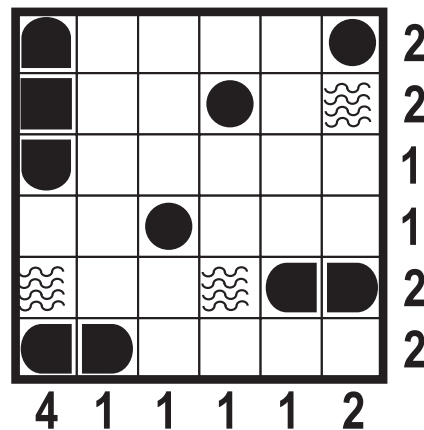
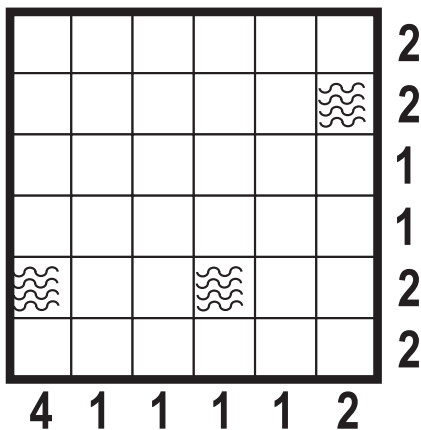
**Part 2**  
**Assorted puzzles**

10:00–11:00  
60 minutes – 870 points

**Individual part**

**Puzzle 1 – Battleship**

Place the given fleet into the grid so that no two ships touch each other, not even diagonally. Numbers around the grid indicate the number of cells occupied by a ship in that row/column. Cells marked with water cannot be occupied by any ship.



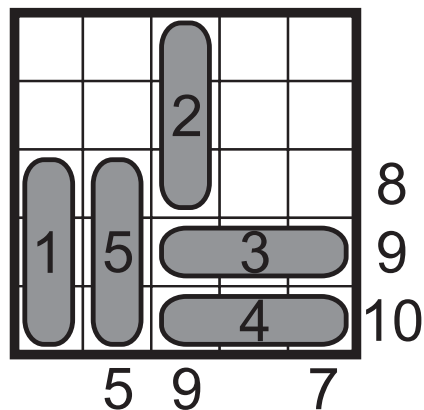
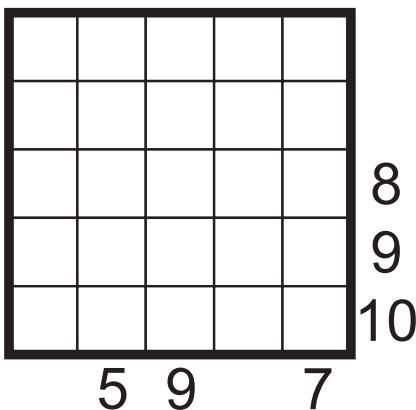
**20**  
points

**20**  
points



**Puzzle 2 – Bank notes**

Locate five 1x3 banknotes in the grid, without overlapping each other. Banknotes have different values from 1 to 5. Clues outside the grid indicate the sum of all banknotes in the corresponding direction.



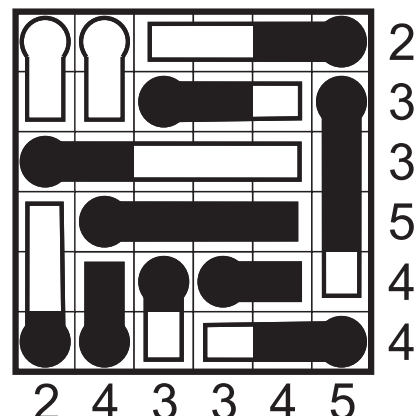
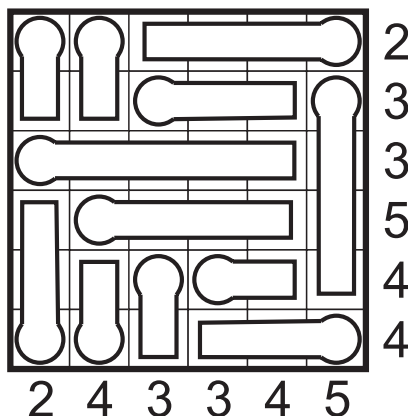
**10**  
points

**10**  
points

**30**  
points

**Puzzle 3 – Thermometres**

There are thermometres in the grid, all of which have their own level of mercury. The mercury always starts from the rounded end and makes it to the other end. There may be empty or full thermometres as well. Numbers around the grid indicate the number of squares in the given row or column that contain mercury.



**20**  
points

**30**  
points

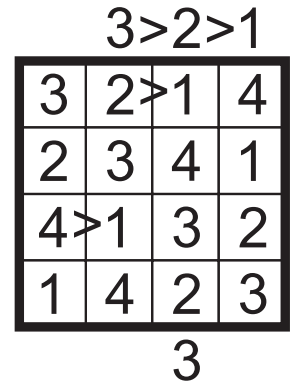
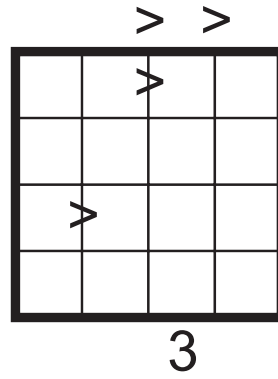
### Puzzle 4 – Skyscrapers varia

Fill in the grid with digits 1 through N (N is the size of the grid) so that each digit appears once in each row/column. Digits represent skyscrapers, denoting their height. Numbers outside the grid indicate the number of different skyscrapers visible from outside that direction, with taller buildings blocking smaller ones from being seen. All the indicated inequality constraints must hold.

**20**  
points

**30**  
points

**45**  
points



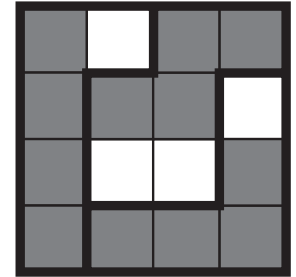
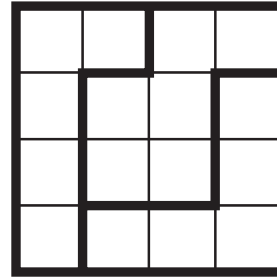
### Puzzle 5 – LITS

Blacken four cells in each outlined area so that each area includes one tetromino shape. Tetrominoes may be rotated and/or mirrored. Blackened cells should form a single interconnected area which does not have any 2x2 square fully painted black. Same tetrominoes cannot touch each other from the sides, but they may touch each other diagonally.

**15**  
points

**20**  
points

**30**  
points



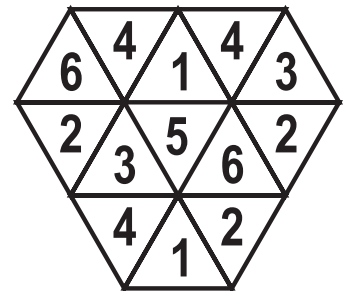
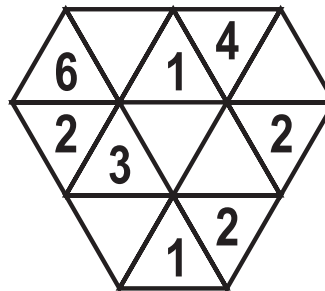
### Puzzle 6 – Tria 6

Write numbers 1-6 into the triangles so that every full hexagon of side 1 (consisting of six small triangles) contains different numbers.

**10**  
points

**10**  
points

**20**  
points



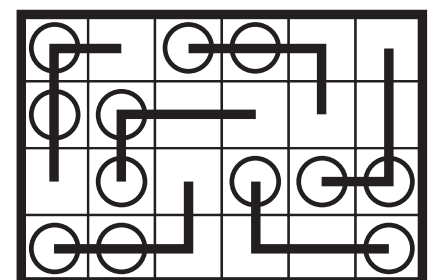
### Puzzle 7

#### Circular Reasoning

Divide the grid into L-shaped pieces of the same size so that each piece contains exactly two circles.

**20**  
points

**25**  
points

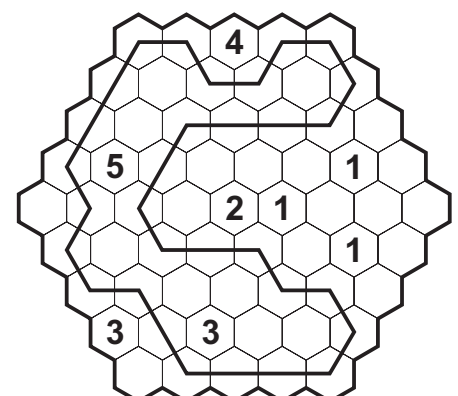
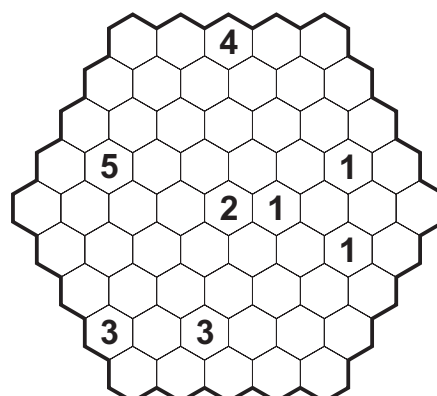


### Puzzle 8 – Hexa loop

Draw a single closed loop that never turns in an acute angle. Numbers indicate the number of cells surrounding it visited by the loop. The loop cannot go through cells with numbers.

**15**  
points

**25**  
points

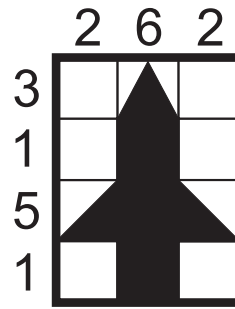





### Puzzle 9 – Invasion

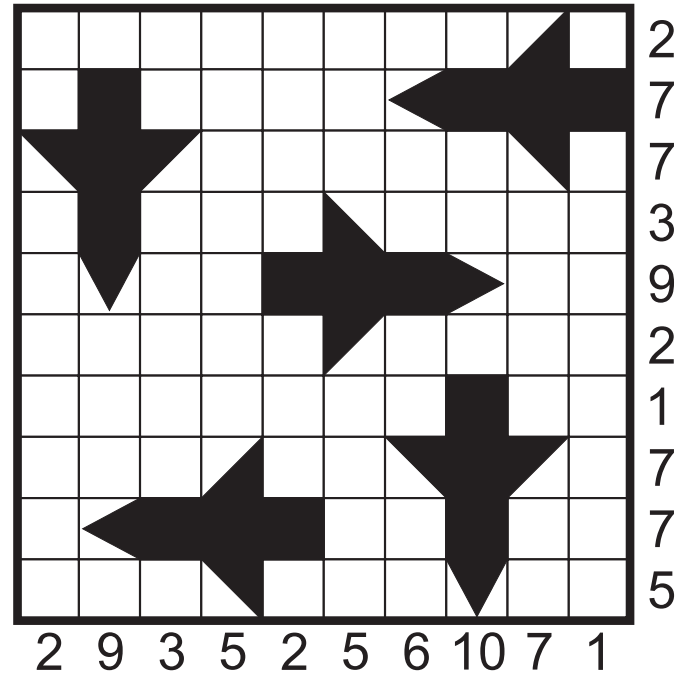
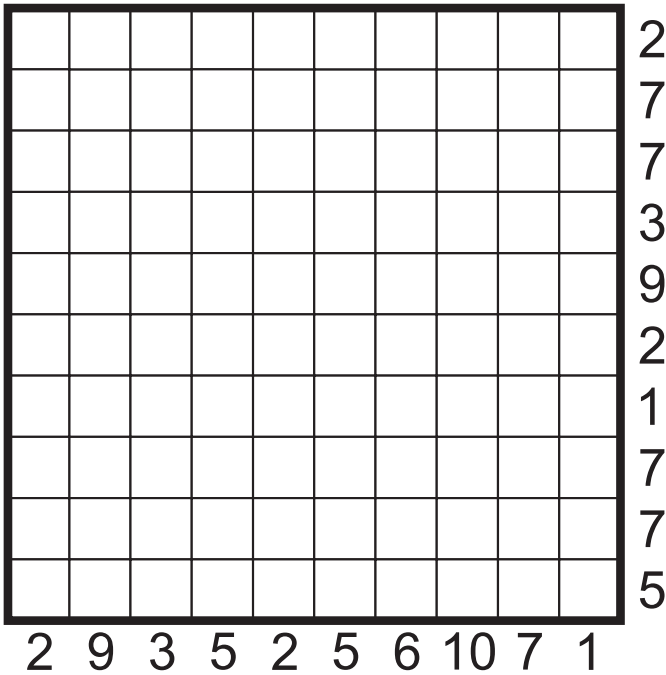
Five fighter jets have been concealed in the grid so that no two cells may share even a corner if they are occupied by two different planes. They are all shaped as the one given but they may be in a rotated position. Different parts of the planes have different weights associated with them. Numbers around the grid indicate the total weights in that row/column.

**25**  
points

**40**  
points



-  3 points
-  2 points
-  1 points

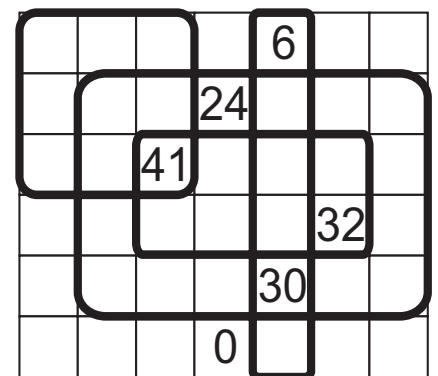
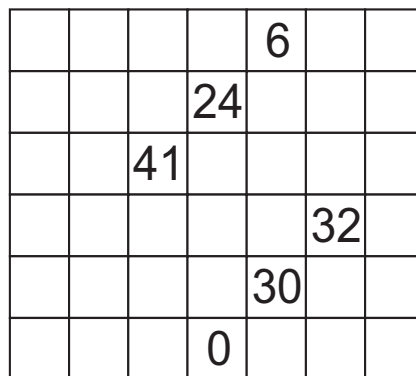


### Puzzle 10 – Rectangles

Draw rectangles along the grid lines so that no two rectangles share a corner or part of an edge, and each number indicates the total area of rectangles it is contained in.

**20**  
points

**30**  
points

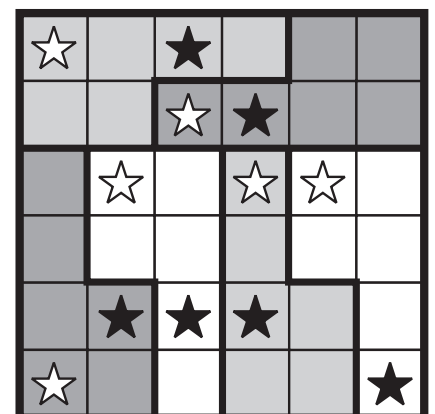
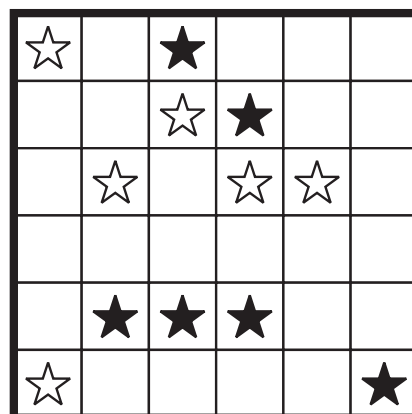


### Puzzle 11 – Division

Divide the given shape into six congruent pieces along the grid lines so that each piece contains one black star and one white star. Pieces may be rotated but not reflected relative to each other.

**30**  
points

**45**  
points





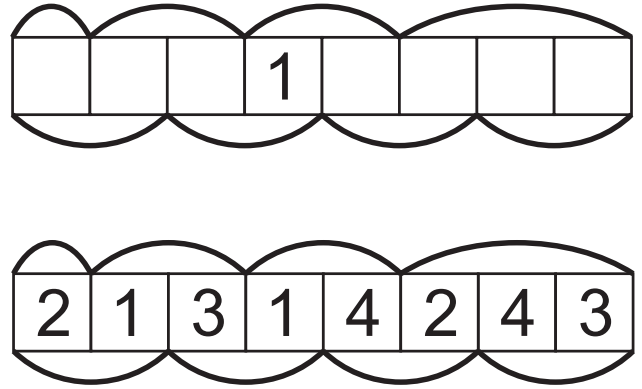
### Puzzle 12 – Total Rising

Fill in the empty cells with digits so that each digit between 1-5 (1-6 and 1-9, respectively) appears twice and no two identical digits should be directly next to each other. Arcs above and below the grid indicate the way to read numbers from the digits. Numbers obtained this way must be strictly increasing, considering both the upper and lower sequence. In the example digits 1-4 are used.

**10**  
points

**15**  
points

**35**  
points



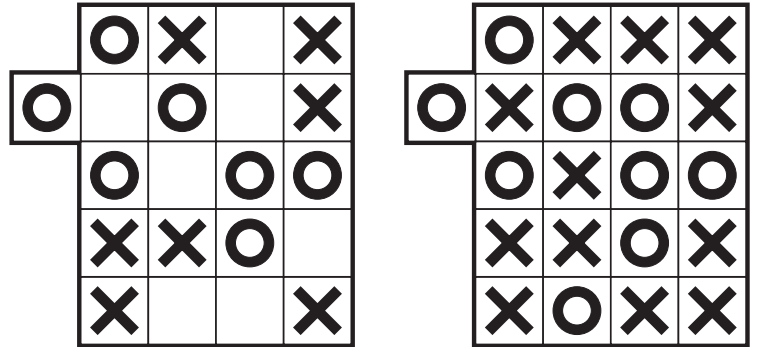
### Puzzle 13 – No four in a row

Fill in the grid with O's and X's so that four consecutive identical letters in a row, column or diagonal never occur.

**10**  
points

**20**  
points

**30**  
points

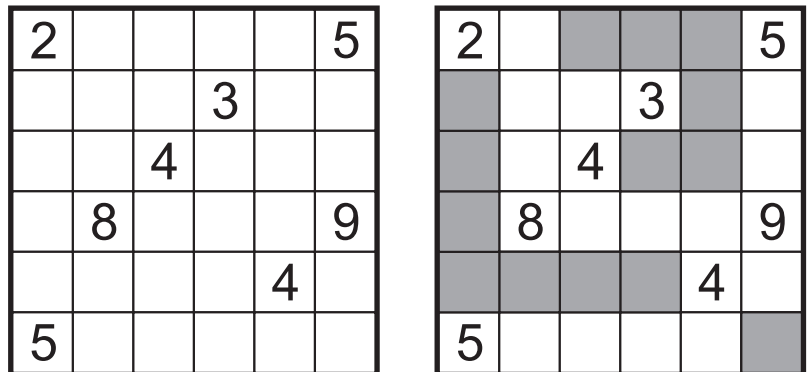


### Puzzle 14 – Cave

Select a connected set of squares - the cave - so that it contains all the numbers inside and each number reveals the number of cells that are visible from the given number's cell (which is included). The cave cannot touch itself, not even diagonally - in other words, it cannot have an island inside.

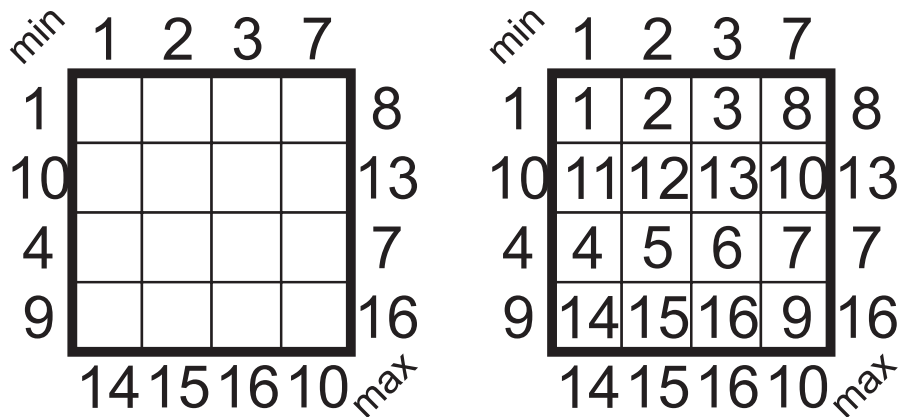
**15**  
points

**40**  
points



### Puzzle 15 – From 1 To 25

Fill in the grid with numbers from 1 through 25 so that the difference between any two edge adjacent numbers is at most 10. Numbers above/left to the grid indicate the smallest number in that row/column, while numbers below/right to the grid indicate the largest ones.



**40**  
points

**40**  
points



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## Individual part

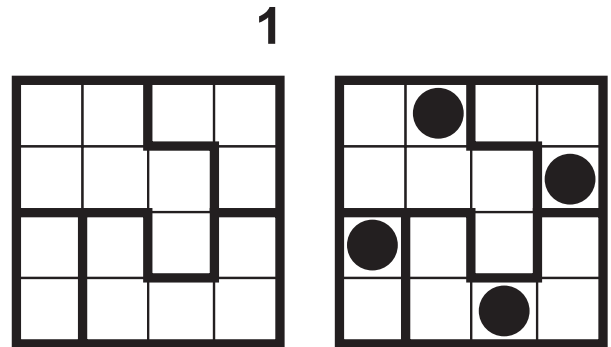
## Part 3 Cows

11:10–12:00  
50 minutes – 420 points

### Puzzle 1 – Classic cows

Mark several squares with cows so that there be an equal number of cows in each row, column and in each area surrounded by thick lines. Cows may not touch each other, not even diagonally. The number of cows in a row is given next to the grid.

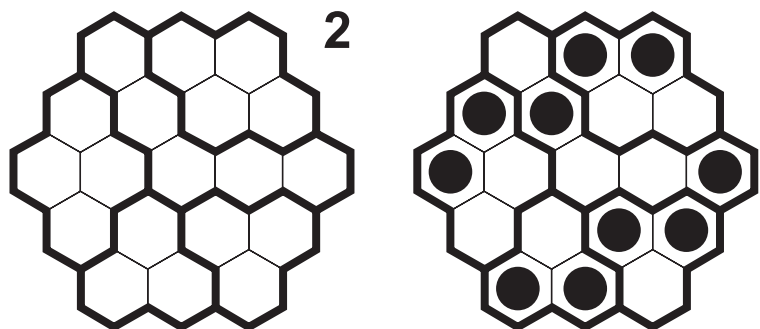
**15** points    **30** points    **50** points



### Puzzle 2 – Hexa cows

Mark several squares with cows so that there be an equal number of cows in each row, column and in each area surrounded by thick lines. The number of cows in a row is given next to the grid.

**45** points



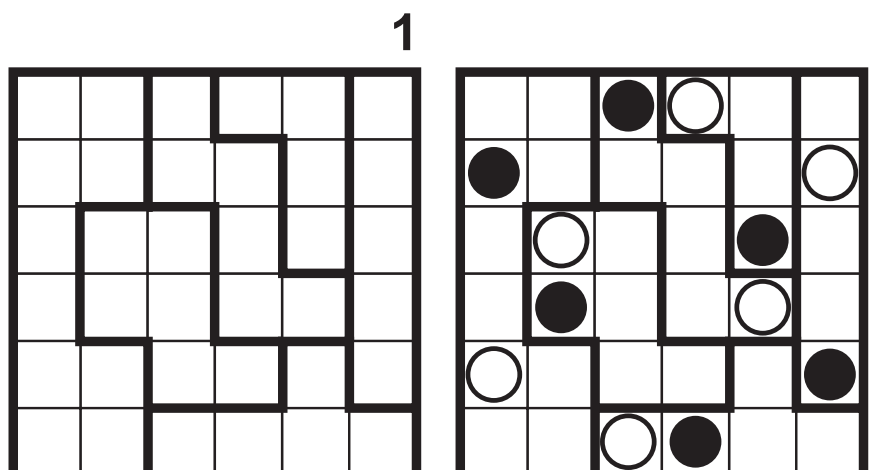
### Puzzle 3 – Cows and bulls

The grid represents a green field, divided into regions. Each row, column and region contains the same number of cows and bulls, the exact number is given with the puzzle (in the example it is one, e.g. one bull and one cow per row/column/region).

The animals can be grouped into pairs of one cow and one bull. Members of a pair are in cells touching at least diagonally, but they do not have to be in the same region. It is possible for a cow to touch multiple bulls or for a bull to touch multiple cows but it's still only one of them that they form a pair with. No two cows and no two bulls can touch each other, not even diagonally.

The puzzle is considered solved if all the animals are marked and the two types are clearly indicated.

**75** points

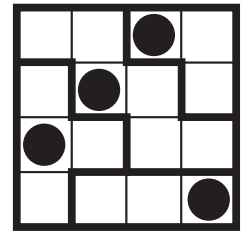
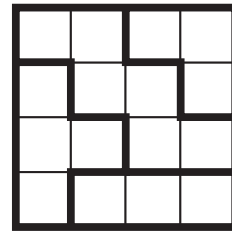


### Puzzle 4 – Knights

Put some chess Knights into the figure so that there be an equal number of cows in each row, column and in each area surrounded by thick lines. Knights may be occupying neighbouring squares, but they cannot attack (defend) each other. The number of Knights in a row is given next to the grid.

**40**  
points

1

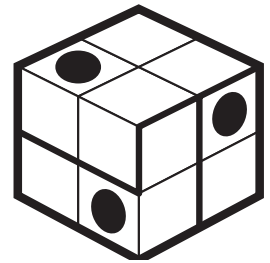
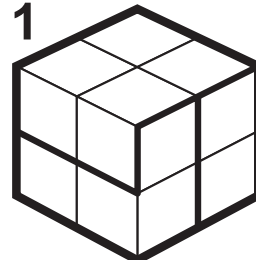


### Puzzle 5 – Cows on the Cube

Mark several squares with cows so that there be an equal number of cows in each row and in each area surrounded by thick lines. In this puzzle, rows are defined as planar sections of the cube along one of the three cardinal directions. Cells containing cows cannot touch each other, not even diagonally. The number of cows in a row / region is given along the puzzle.

**60**  
points

1

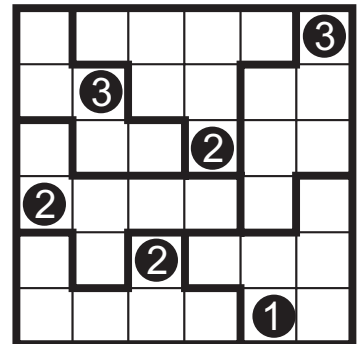
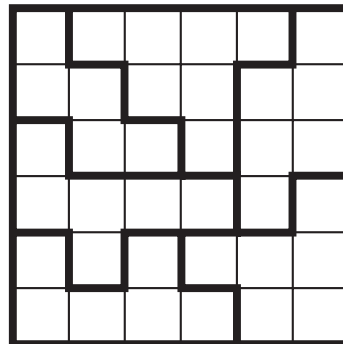
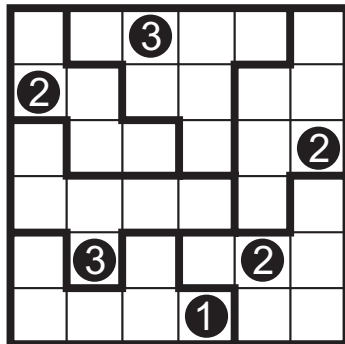


### Puzzle 6 – Moving cows

The cows, already marked by numbered circles, have to walk certain distance to take their final positions. The numbers indicate the distance each of them needs to walk either horizontally or vertically (but not diagonally), without changing directions en route.

**30**  
points

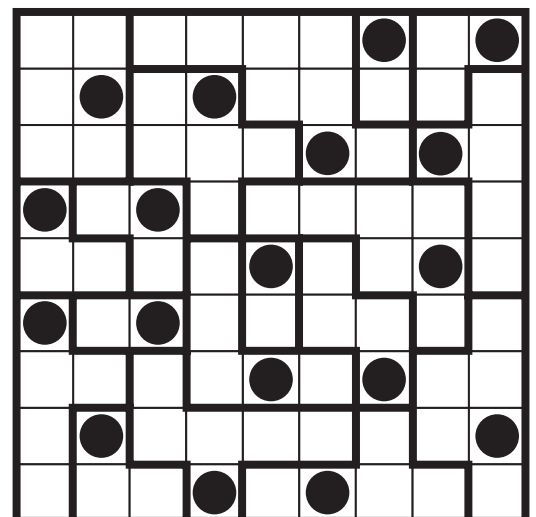
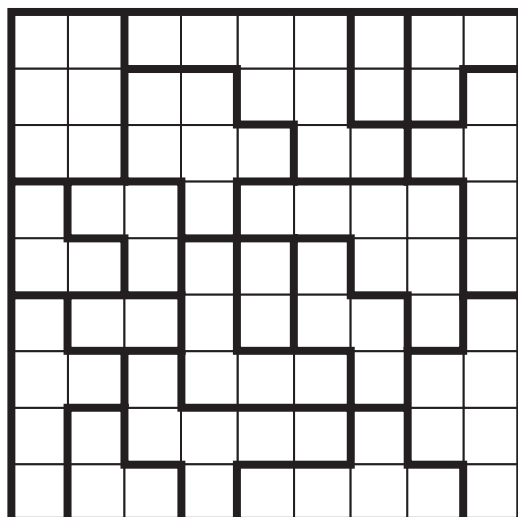
Once all cows have taken their final positions, there will be an identical number of cows in every row, column and region and no two cells with a cow will share an edge or a corner.



### Puzzle 7 – Small regions

Mark several squares with cows so that there be an equal number of cows in each row and column. Cows may not touch each other, not even diagonally. Every outlines region contains exactly one cow. The number of cows in a row is given next to the grid.

2



**75**  
points

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## Part 4 Borderless

13:50–14:20  
30 minutes – 430 points

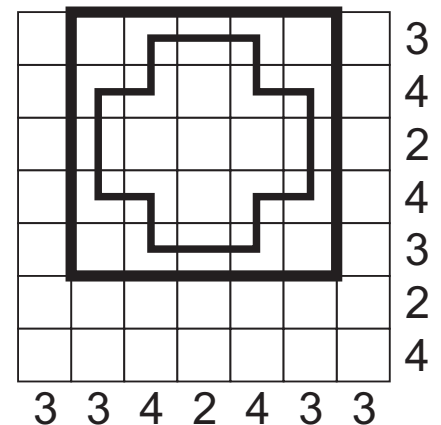
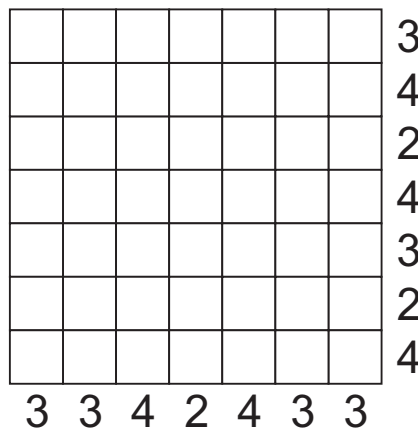
### Individual part

In this round, the boundaries of the puzzles is not given. Instead, a large grid is provided and it is part of the challenge to find the boundaries of the puzzle. The large grid encloses the puzzle but its size and location within that grid is not known. The puzzle may be just a single square or the whole grid.

Puzzles are either rectangular or square shaped, this is specified for each individual puzzle. Clues outside the grid that are in a row/column which the puzzle also occupies are relevant and valid clues for that puzzle. Clues outside the grid that are not in a row/column which the puzzle also occupies have no meaning.

#### Puzzle 1 – Borderless Loop

Find a rectangular loop puzzle in the grid. In the puzzle area, draw a single closed loop travelling only horizontally and vertically, never crossing itself. The loop does not touch itself, not even diagonally. Numbers outside the grid in rows/columns covered by the puzzle indicate the number of cells in that row/column occupied by the loop. Numbers outside the grid that do not belong to the puzzle's rows or columns have no meaning.

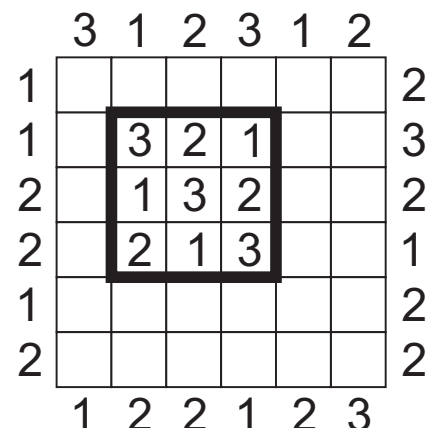
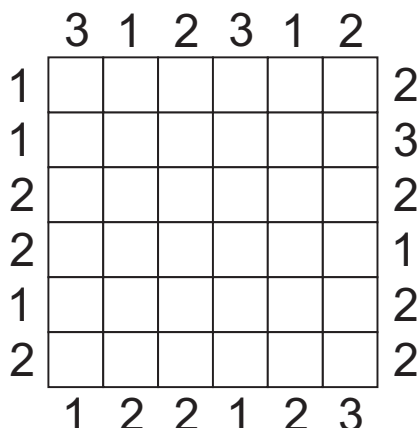


**40**  
points

**50**  
points

#### Puzzle 2 – Borderless Skyscrapers

Find a square shaped Skyscrapers puzzle in the grid. In the puzzle area, fill in the cells with digits 1 through N (the size of the puzzle area) so that each of them appears exactly once in each row and column. N is unknown. These digits represent heights of skyscrapers. Numbers outside the grid in rows/columns covered by the puzzle indicate the number of different buildings that can be seen from that direction in the given row/column, with taller buildings blocking smaller ones from being seen. Numbers outside the grid that do not belong to the puzzle's rows or columns have no meaning.

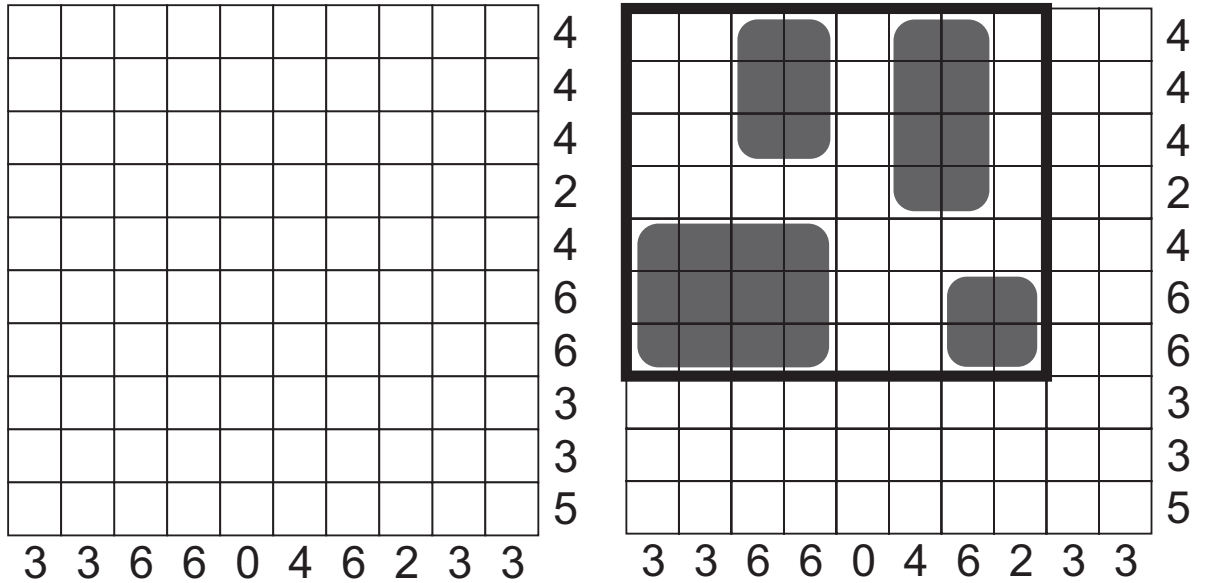


**70**  
points

### Puzzle 3 – Borderless Islands

Find a rectangular Islands puzzle in the grid. In the puzzle area, mark some rectangles (islands) with sides at least two units so that they do not touch each other, not even diagonally. Numbers outside the grid in rows/columns covered by the puzzle indicate the number of cells in that row/column occupied by islands. Numbers outside the grid that do not belong to the puzzle's rows or columns have no meaning.

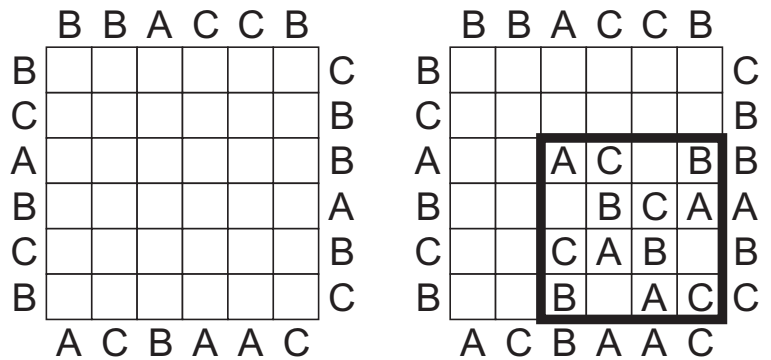
**85**  
points



### Puzzle 4

#### Easy as ABCD - Borderless

Find a square shaped Easy as ABCD puzzle in the grid. In the puzzle area, each row and column contains letters A through D exactly once. Letters outside the grid in rows/columns covered by the puzzle indicate the first letter that can be seen in the puzzle from that direction. Letters outside the grid that do not belong to the puzzle's rows or columns have no meaning.

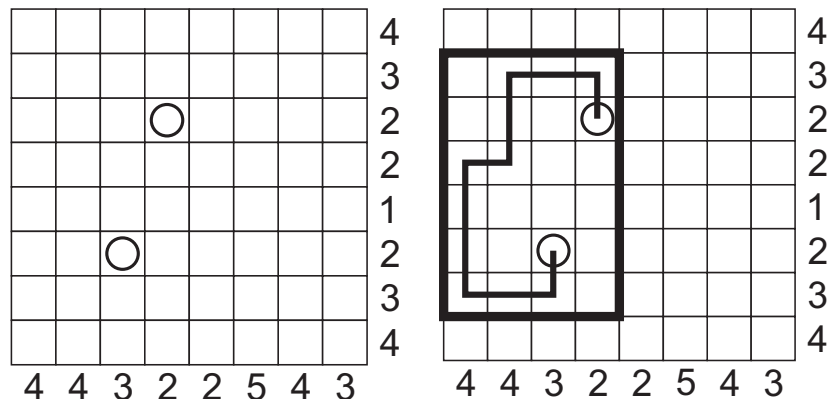


**30**  
points

**45**  
points

### Puzzle 5 – Borderless Snake

Find a rectangular Snake puzzle in the grid. In the puzzle area, draw a continuous line (the snake) of length 45 (13 in the example), travelling horizontally and vertically, never crossing or touching itself, not even diagonally. Numbers outside the grid in rows/columns covered by the puzzle indicate the number of cells in that row/column occupied by the snake. Numbers outside the grid that do not belong to the puzzle's rows or columns have no meaning.

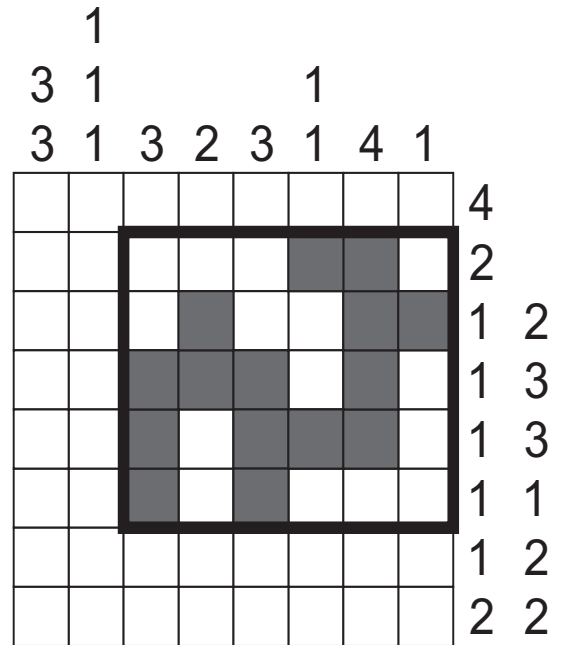
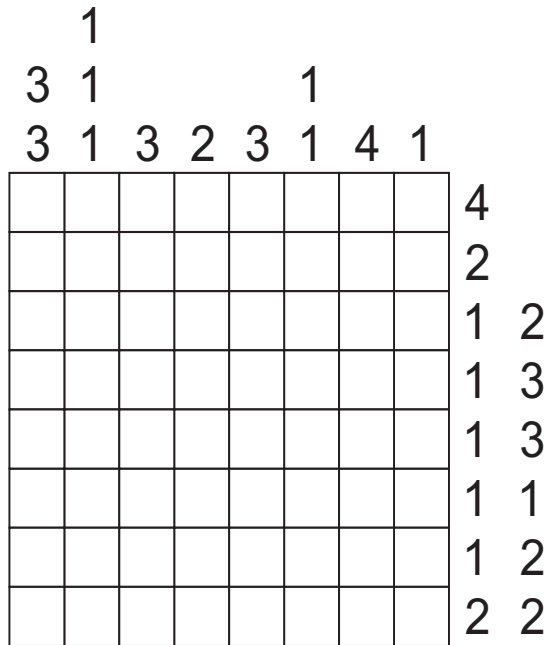


**40**  
points

## Puzzle 6 – Borderless Coral

Find a rectangular Coral finder puzzle in the grid. In the puzzle area, paint some cells to obtain an edge connected shape (the coral) that does not touch itself, not even diagonally. No 2x2 area is covered by the coral. Numbers outside the grid in rows/columns covered by the puzzle indicate the number of cells in that row/column occupied by the coral. Numbers outside the grid that do not belong to the puzzle's rows or columns have no meaning.

**30**  
points

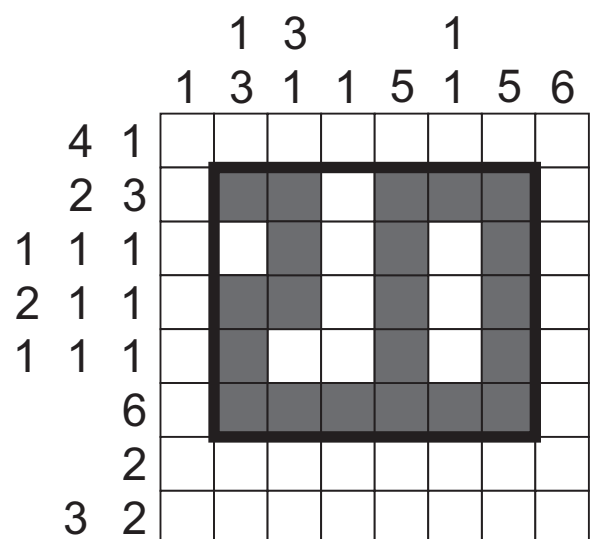
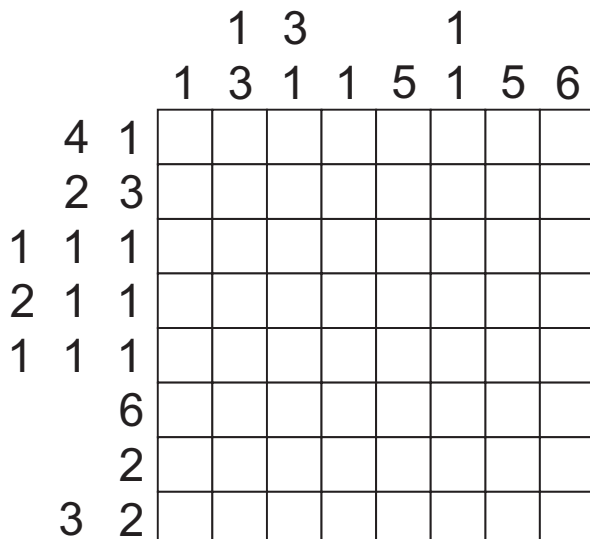


## Puzzle 7

### Paint It Black - Borderless

Find a rectangular Paint It Black puzzle in the grid. In the puzzle area, paint some cells to obtain a picture. Numbers outside the grid in rows/columns covered by the puzzle indicate the number and sizes of cell groups in that row/column occupied by clouds. Consecutive cell groups in a row/column need to have at least one empty cell separating them. Numbers outside the grid that do not belong to the puzzle's rows or columns have no meaning.

**40**  
points



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## Part 5 Evergreens

14:30–15:40  
70 minutes – 750 points

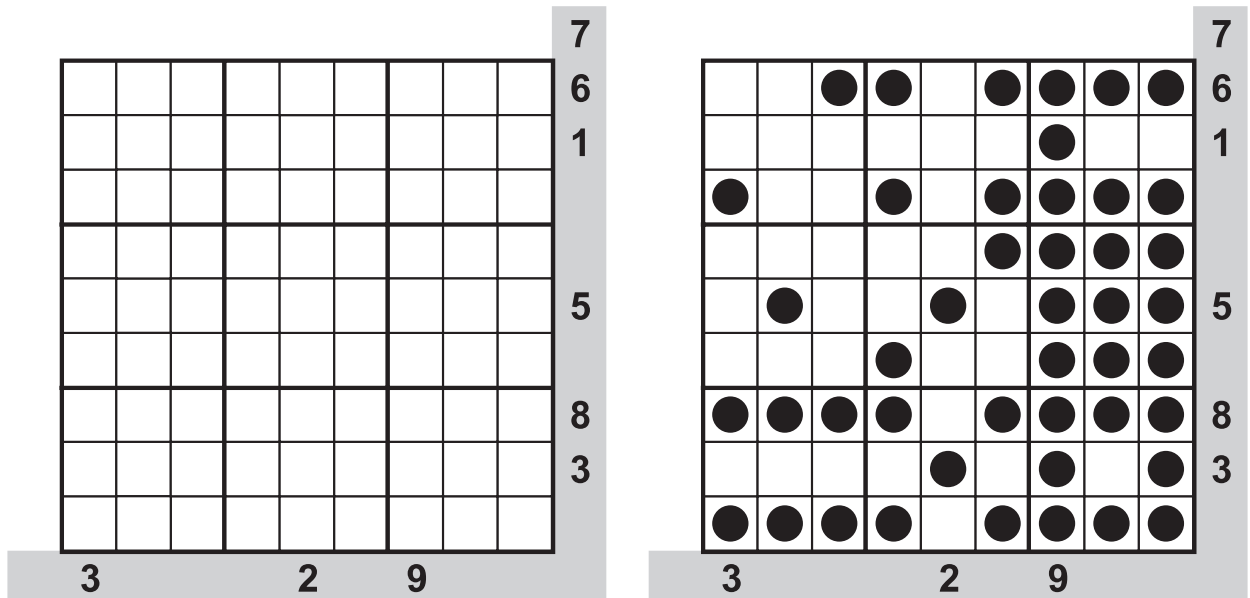
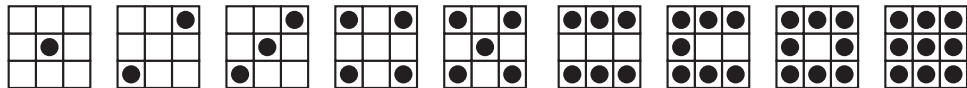
### Individual part

#### Puzzle 1 – Half dominoes

Place the given nine half dominoes into the grid, without rotating or reflecting them. Numbers indicate how many dots are there in the given row, column or diagonal.

25

points



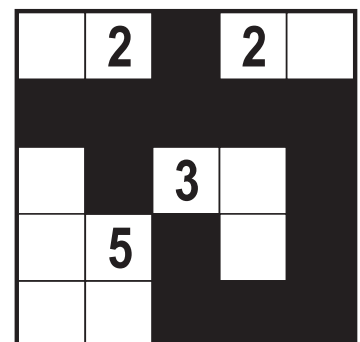
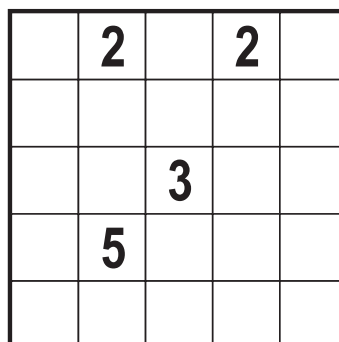
#### Puzzle 2 – Nurikabe

Each number in the grid is part of an island. The number represents the number of squares in the island, including the numbered square itself. The squares that make up an island must be connected horizontally and/or vertically. Islands cannot touch each other horizontally or vertically; however, they can touch diagonally. The remaining squares represent water and must be painted black. The water squares form a completely connected path around the islands, where successive squares share an edge either horizontally and vertically. No 2x2 region can be completely covered by water.

No island can contain more than one number.

35

points



### Puzzle 3 – Open Office

The grid represents an office, with each cell being a cubicle. Place some walls so that each number indicates the number of other cubicles visible from that of the number (visibility is horizontal or vertical only). The office needs to remain connected.

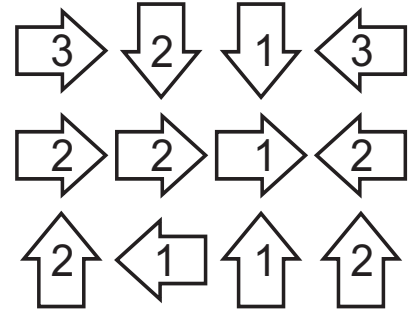
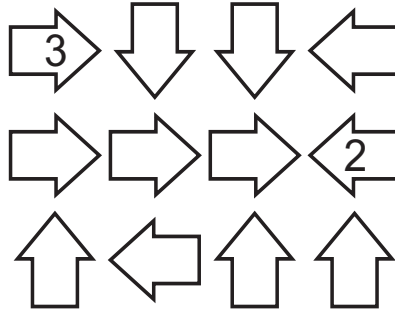
**60**  
points

|   |   |   |
|---|---|---|
| 1 | 3 | 2 |
| 2 | 3 | 1 |
| 2 | 4 | 2 |

|   |   |   |
|---|---|---|
| 1 | 3 | 2 |
| 2 | 3 | 1 |
| 2 | 4 | 2 |

### Puzzle 4 – Japanese Arrows

Put a digit into each cell such that each number equals to the number of different numbers its arrow is pointing at.



**20**  
points

### Puzzle 5 – Japanese sums

Fill the grid with digits 1-9 (1-4 for the example) so that no digit is repeated within a row or a column, and blacken all the remaining cells of the grid. Numbers outside the grid indicate the sums of continuous number groups encountered in the corresponding directions, in order. A single number in a direction should also be considered as a number group. There must be at least one blackened square between different number groups. The sum information for some rows/columns may be missing.

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   | 7 | 3 | 5 | 7 |
| 1 | 3 |   |   |   |   |
| 3 | 4 |   |   |   |   |
| 4 | 1 |   |   |   |   |
| 2 | 4 |   |   |   |   |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   | 7 | 3 | 5 | 7 |
| 1 | 3 |   | 1 |   | 3 |
| 3 | 4 | 1 | 2 |   | 4 |
| 4 | 1 | 4 |   | 1 |   |
| 2 | 4 | 2 |   | 4 |   |

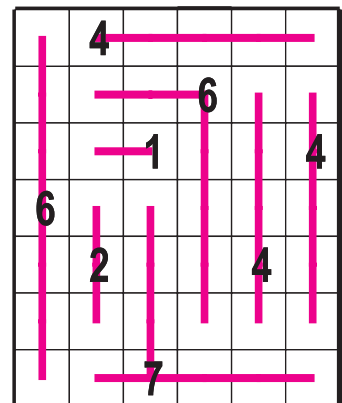
**70**  
points

### Puzzle 6 – Four winds

One or more horizontal or vertical lines are drawn from each numbered square. Lines cannot cross other numbered squares. Each number indicates how many squares are connected by its lines; the numbered squares themselves are not counted. No lines overlap or intersect each other.

**35**  
points

|   |   |   |   |   |
|---|---|---|---|---|
|   | 4 |   |   |   |
|   |   | 6 |   |   |
|   |   | 1 |   | 4 |
| 6 |   |   |   |   |
|   | 2 |   | 4 |   |
|   |   |   |   |   |
|   |   | 7 |   |   |



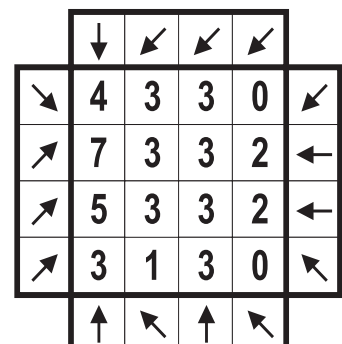
### Puzzle 7 – Arrows

Draw arrows into the empty squares around the grid. An arrow may be horizontal, vertical or diagonal. Every number inside the grid is equal to the number of arrows that are pointing to it.

All arrows point to at least one number.

**25**  
points

|  |   |   |   |   |
|--|---|---|---|---|
|  |   |   |   |   |
|  | 4 | 3 | 3 | 0 |
|  | 7 | 3 | 3 | 2 |
|  | 5 | 3 | 3 | 2 |
|  | 3 | 1 | 3 | 0 |
|  |   |   |   |   |



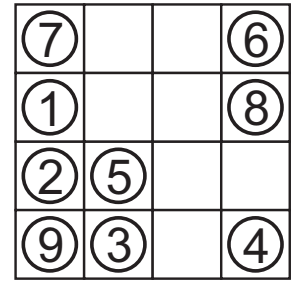
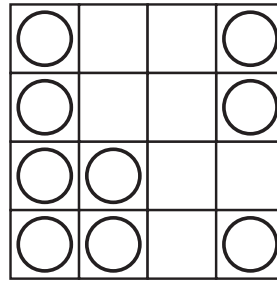


### Puzzle 8 – Increasing distance

Put numbers 1 through N into the circles, once each, such that the distance between consecutive numbers is increasing. One number is given.

**30**  
points

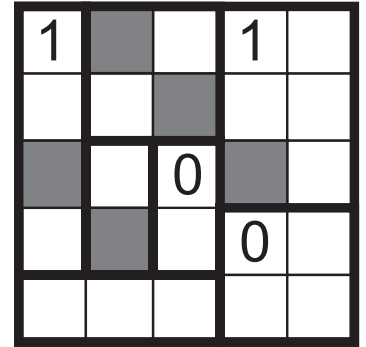
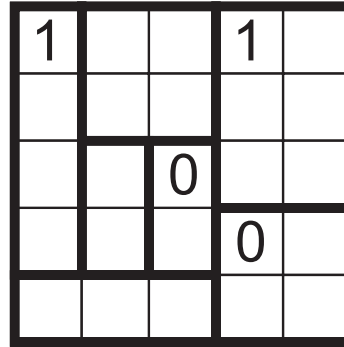
**30**  
points



### Puzzle 9 – Heyawake

Blacken some cells so that all remaining cells must be connected orthogonally. No two black cells can share an edge. It's possible to blacken a cell with a number. Any single horizontal or vertical line of white cells cannot traverse more than one thick line. Numbers indicate the amount of black cells in that region.

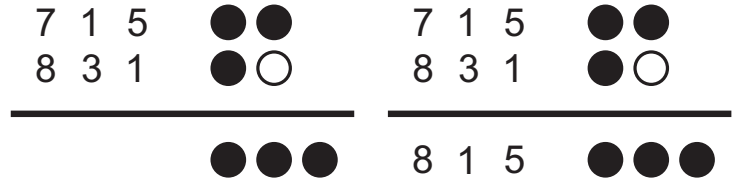
**65**  
points



### Puzzle 10 – Mastermind

Find out the hidden code from the given clues. Black circles denote the numbers of correctly guessed symbols that are also at the correct location. White circles denote the number of guessed symbols that also appear in the solution but at a different location.

**35**  
points

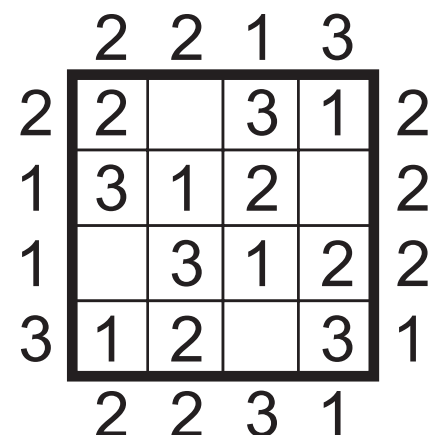
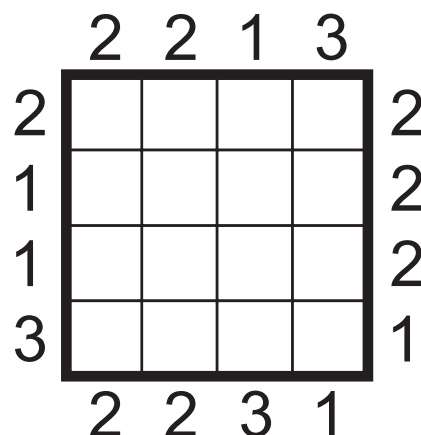


### Puzzle 11 – Skyscrapers

Fill in some of the cells with digit 1 through N so that each digit appears once in each row/column. Digits represent skyscrapers, denoting their height. Numbers outside the grid indicate the number of different skyscrapers visible from outside that direction, with taller buildings blocking smaller ones from being seen. Cells with X contain no buildings.

**45**  
points

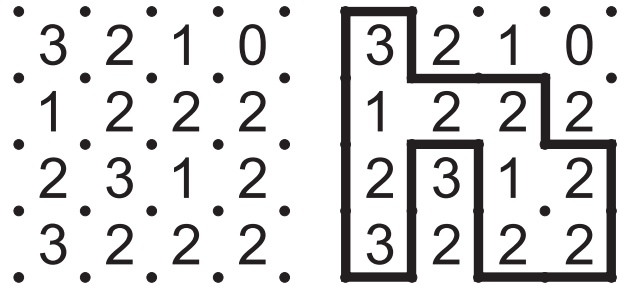
N = 3



### Puzzle 12 – Fences

Draw a single continuous loop into the grid, travelling horizontally and vertically through some of the dots given. Numbers denote how many sides of the square containing the number are occupied by the loop.

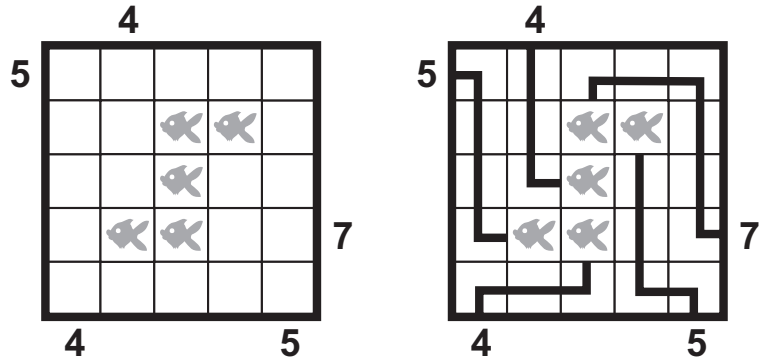
**35**  
points



### Puzzle 13 – Anglers

The grid represents a lake and some squares contain a fish. There are a few anglers sitting around the lake, each of whom have caught a fish. The cords only travel horizontally or vertically and do not cross or overlap themselves or each other. Numbers reveal the length of the cord that connects the given angler with his fish.

**25**  
points

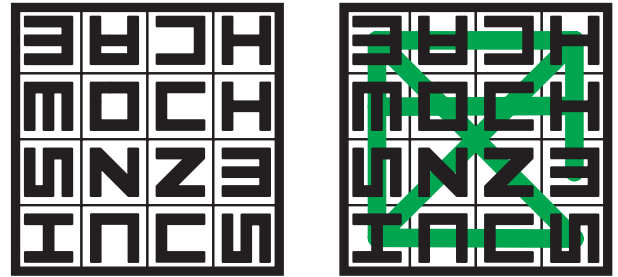


### Puzzle 14 – Wordsearch

Find all the given words in the grid. Words can be read any of the eight directions. The grid can also be rotated. This makes a total of 32 way of reading a word. Partial scores are available for this puzzle. There will be ten words, finding each is worth 5 points.

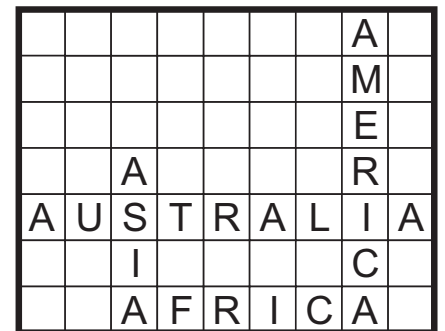
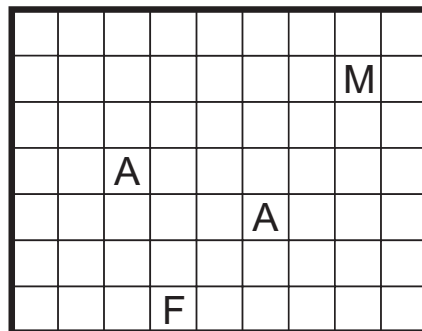
**50**  
points

EACH, MOCH,  
SUCH, MESH,  
INCH, SNOW,  
WII.



### Puzzle 15 – Scrabble

Place the given words into the grid so that they form a connected network. No new word can appear besides the given ones, not even one of length two. Ignore spaces in the given words.



AFRICA, AMERICA, ASIA,  
AUSTRALIA.

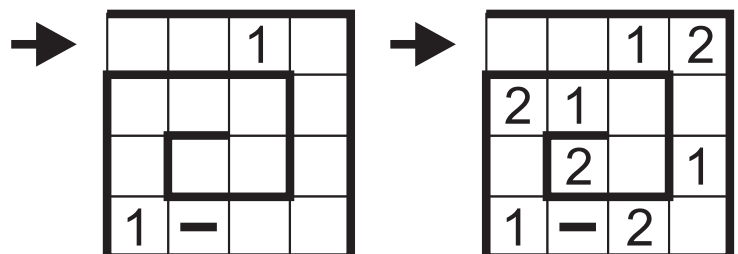
**50**  
points

**50**  
points

### Puzzle 16 – Magic snail

Fill in the grid so that in each row and column the numbers 1 through 3 appear exactly once. Along the snail, from outside towards the middle, the order of the numbers must be 1-2-3-1-2-3-etc.

**65**  
points



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**Team part**

**Part 6  
Board Games**

16:30–17:10  
40 minutes – 800 points

## Puzzle 1-8

These puzzles must be solved without using any markers (pencil, pen, eraser etc.), just with some manipulative pieces. More information will be given on 9<sup>th</sup> November evening.

**6<sup>th</sup> World Sudoku  
Championship**

6-10 November 2011



**20<sup>th</sup> World Puzzle  
Championship**

8-13 November 2011

**Team part**

**Part 7  
Naval Puzzles**

17:30–18:30  
60 minutes – 1600 points

**This is an “Opposite Weakest Link” round.**

This team round consists of a team puzzle and several individual puzzles. At the start of the round, everybody is at their team table and the team puzzle is uncovered. At any point of time, one team member can solve an individual puzzle, while the other three continue to work on the team puzzle. Upon successful completion of the individual puzzle, the competitor is rewarded with a help for the team puzzle, then sits back to table. If the solution is wrong, then no clues are awarded for that puzzle. The team puzzle is uniquely solvable even without any of the helps.

In total, there are 20 helps available and conversely, there are 20 individual puzzles. Team members should take their individual turns in fixed order, e.g. (assuming 4-member teams) the first puzzler will attempt to solve individual puzzles 1, 5, 9, ..., the second puzzler will attempt puzzles 2, 6, 10, ... etc. The order of the individual puzzles will be the same for all teams. This is to ensure that every team member gets to solve all types of individual puzzles.

Helps will consist of pieces of information about specific cells as seen in the example below: the 9th column in the 4th row has an island corner in it, etc.

A “Snake” clue indicates a cell that is part of a snake.

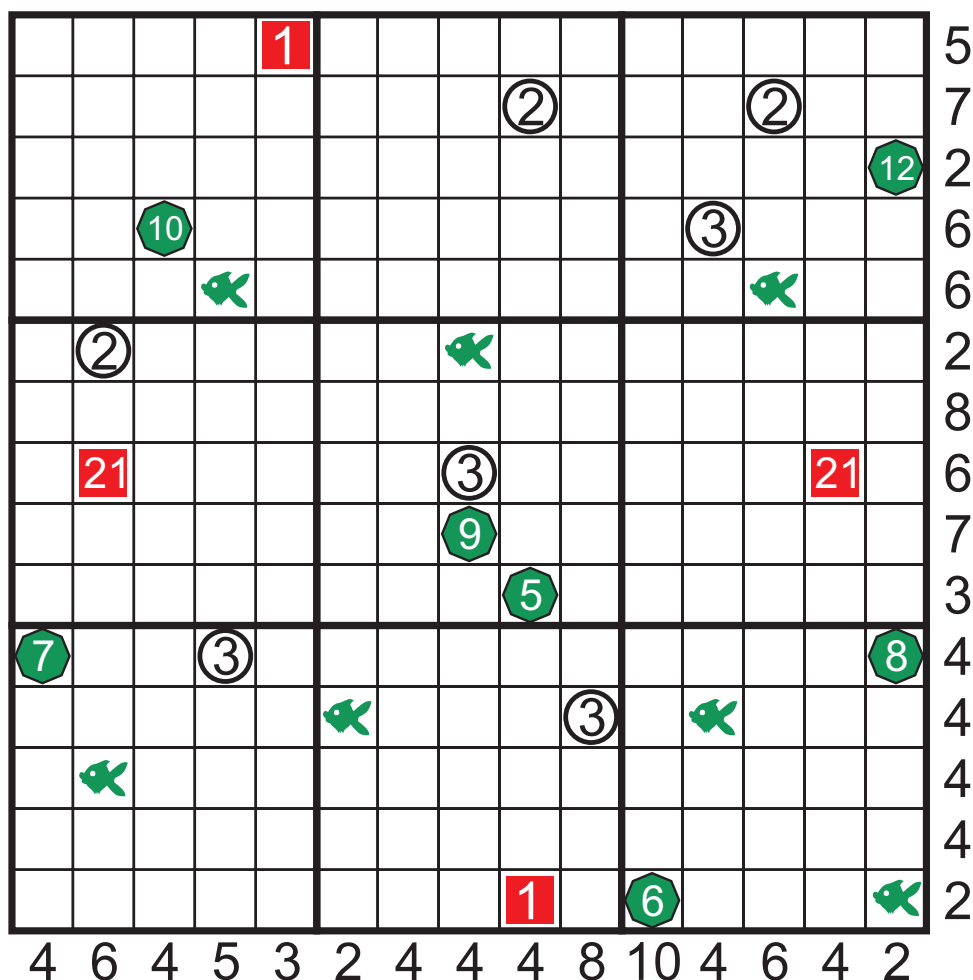
An “Angler” clue indicates a cell that is part of an angler’s cord.

A “Ship” clue indicates a cell with a ship (for Lighthouses).

After 20 minutes, teams with less than 6 helps collected will receive two helps for each completed puzzle until they reach 6 collected helps. The same applies for 40 minutes / 11 helps.

|        |       |  |
|--------|-------|--|
| Island | R4C9  |  |
| Snake  | R15C4 |  |
| Angler | R2C14 |  |
| Ship   | R4C4  |  |
| Island | R9C10 |  |

The grid, representing an ocean with various objects, is actually four different puzzles together (Islands, Lighthouses, Snakes and Anglers). Any cell either remains empty (representing water) or contains either one of the following: a part of an island, a part of a snake, a part of an angler's cord (including a fish or a boat), or a ship sized of a single cell. Lighthouses are located on islands.



### Islands

Find some rectangle shaped islands in the grid that do not touch each other, not even diagonally. The sides of the islands are at least two units long. Numbers around the grid indicate the number of cells occupied by islands in that row/column.

### Snakes

Draw four snakes into the grid, each of length 45, so that they do not touch each other and themselves, not even diagonally. Their heads, tails and the middle of their bodies are given but it is not known which belongs to which snake (in the example puzzle, two snakes of length 21 are used).

### Lighthouses

Lighthouses, marked with white circles, are located at island coasts. Their light is visible from eight directions (horizontally, vertically and diagonally), provided there is no island part between the viewer and the tower. This means that a lighthouse on the edge on an island is visible

from 3 directions only, this gets up to 5 in case of a tower on the corner of an island.

Draw 63 ships into the grid so that they do not touch each other or any island, not even diagonally. (In the example puzzle, there are only 21 ships.)

### Anglers

In the grid some squares contain a fish. There are a few anglers sitting in boats (not ships), marked as green octagons, each of whom have caught a fish. The cords only travel horizontally or vertically and do not cross or overlap themselves or each other. Numbers reveal the length of the cord that connects the given angler with his fish.

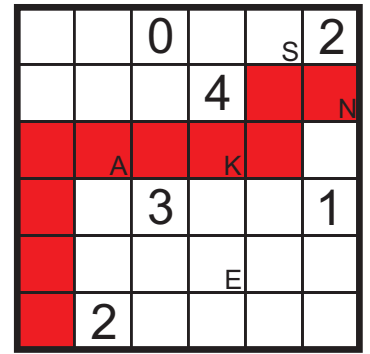
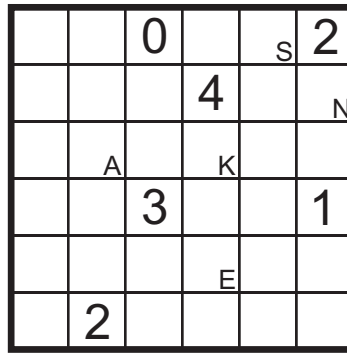
### Mixed rules

Angler cords and snakes cannot overlap or cross each other. A lighthouse is visible from a ship over the top of snakes, cords, boats and other ships.

No part of a snake/cord may pass through any cell with a boat/ship/island.

### Puzzle 1 - Snake

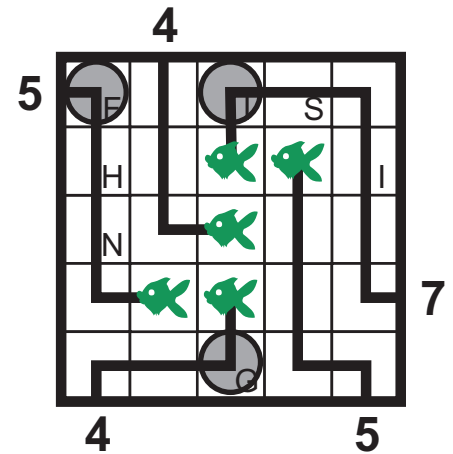
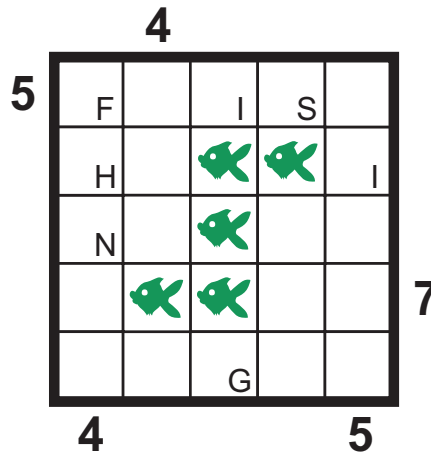
Draw a snake into the grid that only travels horizontally and vertically while never touching itself. Given digits indicate the number of surrounding cells (as in a Minesweeper puzzle, sharing at least a corner) with the snake passing through.



○ = ■ S N A K E

### Puzzle 2 - Anglers

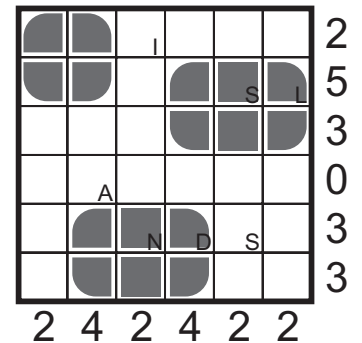
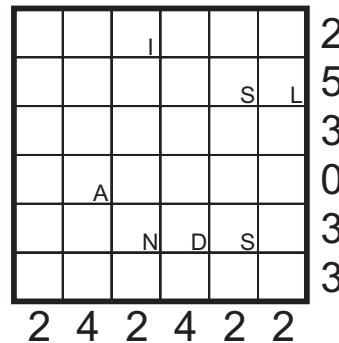
The grid represents a lake and some squares contain a fish. There are a few anglers sitting around the lake, each of whom have caught a fish. The cords only travel horizontally or vertically and do not cross or overlap themselves or each other. Numbers reveal the length of the cord that connects the given angler with his fish.



○ =  F I S H I N G

### Puzzle 3 - Islands

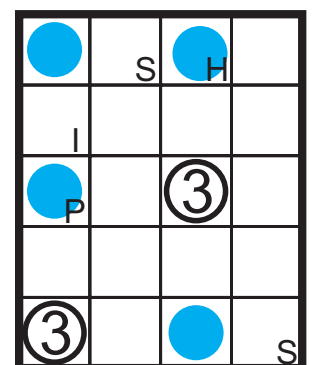
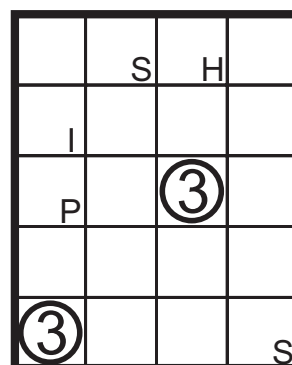
Draw some rectangles into the grid, with sides at least two units, so that they do not touch each other, not even diagonally. Numbers outside the grid indicate the number of cells in that row/column occupied by islands.



○ = ■ I S L A N D S

### Puzzle 4 - Lighthouses

In the grid, given numbers represent lighthouses and the remaining area represents the ocean surrounding them. Find the given number of ships, each occupying a single cell, in the grid such that no two boat touches a lighthouse or another boat. Numbers also indicate the number of ships the lighthouse is visible from one of the four (horizontal, vertical) directions. In the "small" puzzles, lighthouses are not visible from the ships diagonally.



○ = ● S H I P S

## Checking the individual puzzles

In order for us to be able to very quickly check the individual puzzles, some letters have been placed into each of them. Upon solving a puzzle, you need to find those letters and circle them down outside the puzzle, see the rules for each of the puzzle types separately. We will only check those letters for accuracy to decide whether or not the help will be awarded.

**Snake:** collect all letters whose cells are occupied by the snake.

**Anglers:** collect all letters where the cords make a 90 degrees turn.

**Islands:** collect all letters where an island has a top right corner.

**Lighthouses:** collect all letters whose cells contain a ship.

## Scoring

Partial scores are available in this round.

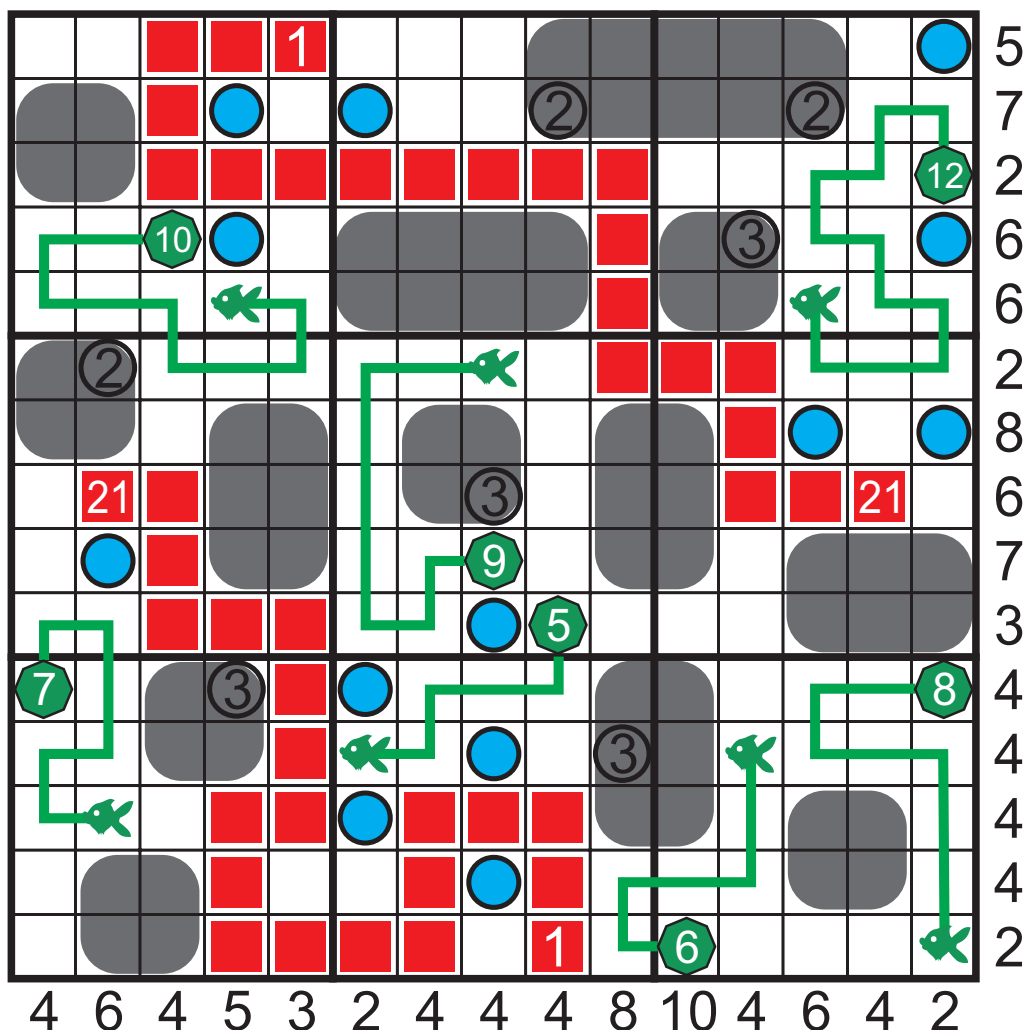
Every non-empty cell will earn points if correctly marked.

Every cell of an island or a snake is also worth 2 points.

For any correctly found ship, 7 points are awarded (but 5 points penalty for each wrongly placed ship if there are more than five of them).

For any cord connecting an angler to his fish, 10 points are awarded.

There are no scores for the individual puzzles.



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20<sup>th</sup> World Puzzle  
Championship  
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Individual part

Part 8  
Screentest

09:00–09:30  
30 minutes – 200 points

More information and examples will be given on 9<sup>th</sup> November morning on the Questioning Session.

**6<sup>th</sup> World Sudoku  
Championship**  
6-10 November 2011



**20<sup>th</sup> World Puzzle  
Championship**  
8-13 November 2011

**Part 9  
Sprint**

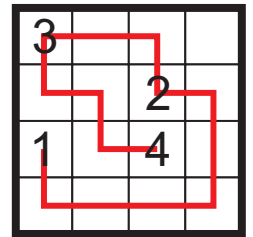
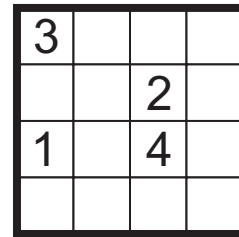
09:45-10:15  
30 minutes - 300 points

**Individual part**

**Puzzle 1 - Ariadne's threads**

Connect all numbers in increasing order. The line can only travel horizontally and vertically, while never crossing itself.

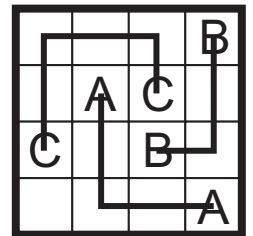
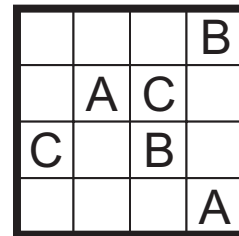
|                     |                     |
|---------------------|---------------------|
| <b>10</b><br>points | <b>10</b><br>points |
| <b>20</b><br>points | <b>20</b><br>points |



**Puzzle 2 - ABC-connection**

Connect identical pairs of letters with lines travelling only horizontally and vertically, never intersecting each other.

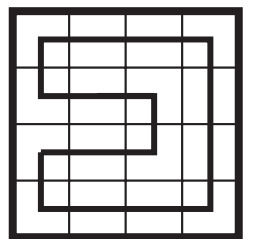
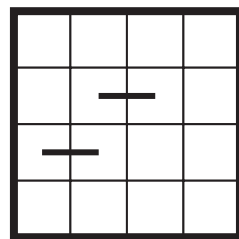
|                     |                     |
|---------------------|---------------------|
| <b>10</b><br>points | <b>10</b><br>points |
| <b>20</b><br>points | <b>20</b><br>points |



**Puzzle 3 - Fragmented loop**

Draw a single connected loop that passes through all cells. Some of its fragments are given.

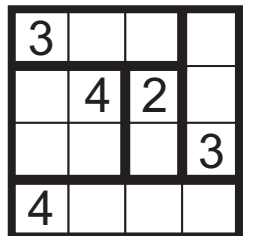
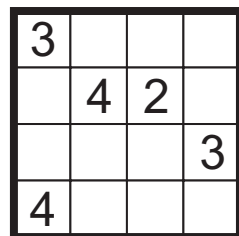
|                     |                     |
|---------------------|---------------------|
| <b>10</b><br>points | <b>10</b><br>points |
| <b>20</b><br>points | <b>20</b><br>points |



**Puzzle 4 - Shikaku**

Divide the puzzle into rectangles along the grid lines, such that each rectangle contains a single number equalling the area of that rectangle.

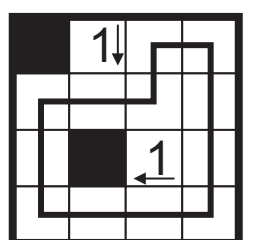
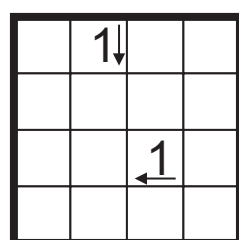
|                     |                     |
|---------------------|---------------------|
| <b>10</b><br>points | <b>10</b><br>points |
| <b>20</b><br>points | <b>20</b><br>points |



**Puzzle 5 - Yajilin**

Draw a single closed loop, then paint black all squares neither visited by the loop nor containing a number. These black squares cannot be edge adjacent. Each given number reveals the number of black squares its arrow is pointing at.

|                     |                     |
|---------------------|---------------------|
| <b>10</b><br>points | <b>10</b><br>points |
| <b>20</b><br>points | <b>20</b><br>points |





**6<sup>th</sup> World Sudoku Championship**  
6-10 November 2011



**20<sup>th</sup> World Puzzle Championship**  
8-13 November 2011

**Part 10**  
**Divide and conquer**

10:30–11:00  
30 minutes – 400 points

**Individual part**

**Puzzle 1 – Divide and conquer**

Divide the given shapes into several regions along the grid lines. The sizes of the regions are given. Each number equals to the size of the region it is in. It is possible for a region to contain multiple numbers or none at all. It is also possible for two regions of identical size to share corners or edges. Black cells are not part of any region.

3 x2  
4 x2  
10

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   | 3 |   |   |   |
|   | 3 |   | 3 |   | 4 |
|   |   | 3 |   |   |   |
| 4 |   |   |   | 4 |   |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   |   | 3 |   |   |   |
|   | 3 |   | 3 |   | 4 |
|   |   | 3 |   |   |   |
| 4 |   |   |   | 4 |   |

|                     |                     |                     |                     |
|---------------------|---------------------|---------------------|---------------------|
| <b>10</b><br>points | <b>10</b><br>points | <b>15</b><br>points | <b>20</b><br>points |
| <b>20</b><br>points | <b>20</b><br>points | <b>20</b><br>points | <b>25</b><br>points |
| <b>25</b><br>points | <b>30</b><br>points | <b>30</b><br>points | <b>35</b><br>points |
| <b>35</b><br>points | <b>40</b><br>points | <b>65</b><br>points |                     |

**6<sup>th</sup> World Sudoku Championship**  
6-10 November 2011



**20<sup>th</sup> World Puzzle Championship**  
8-13 November 2011

**Part 11**  
**Magic 11**

11:11–11:55  
4\*11 minutes – 550 points

**Individual part**

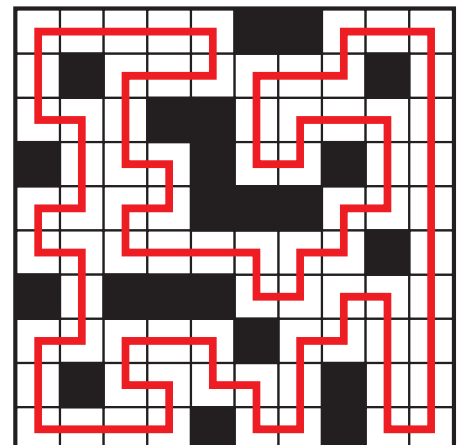
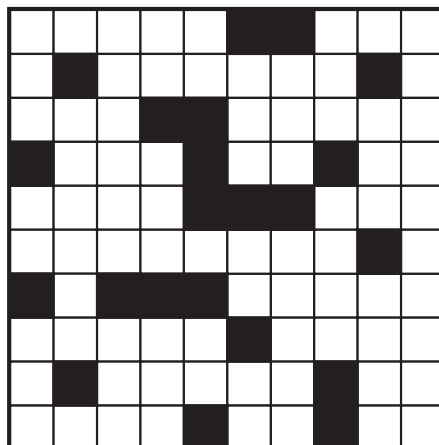
**This round is dedicated to number 11 in two ways:**

1. Starting time will be exactly 11/11/11 11:11:11.
2. All puzzles have strong connections to number 11.

**Puzzle 1 – Loopfinder**

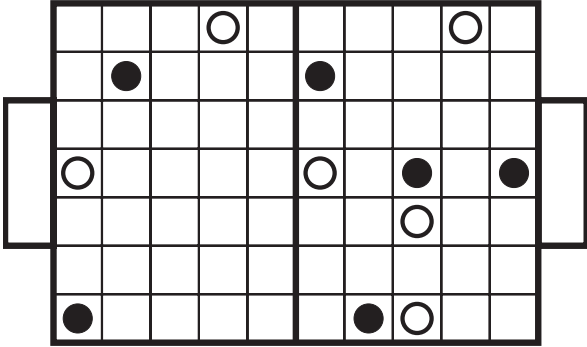
Find a single closed loop in the grid that only travels horizontally and vertically, never touching or crossing itself. The loop passes through all white cells but none of the black ones.

**11**  
points

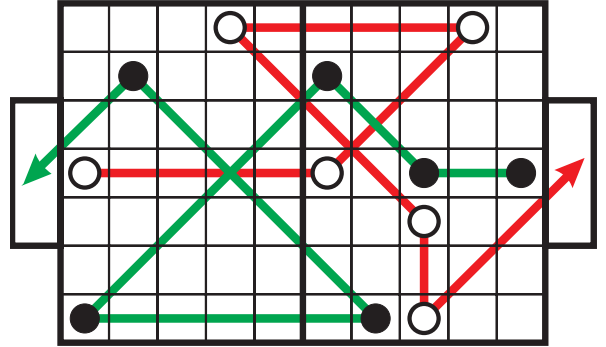


### Puzzle 2 – Football Match

In a friendly football match between Black and White, both teams have scored once. During a successful attack, the ball is initially in the goalkeeper's hands. He passes to one of his team mates, who passes on another, etc. Each player of the team touches the ball exactly once before the last player to do so scores. Obviously, no player from the opposite team may touch the ball during the attack. A pass may go horizontally, vertically or diagonally to any distance. Players do not move. Lob pass is not allowed (i.e. the ball cannot fly over a player's head). Goal attempts that hit the post are not successful.



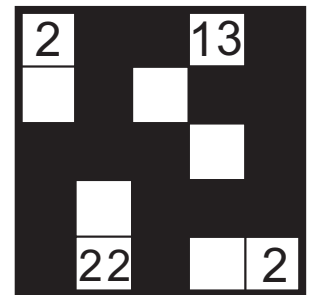
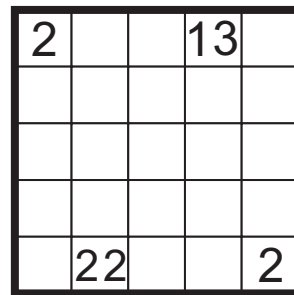
**22**  
points



### Puzzle 3 – Tapa

Paint some cells black to create a continuous wall. Number/s in a cell indicate the length of black cell blocks in its eight surrounding cells. If there is more than one number in a cell, there must be at least one white cell between the black cell blocks. Painted cells cannot form a 2x2 square or larger. There are no wall segments on cells containing numbers.

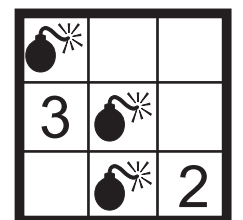
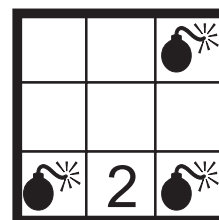
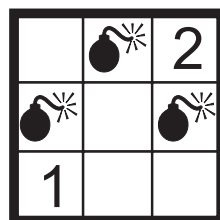
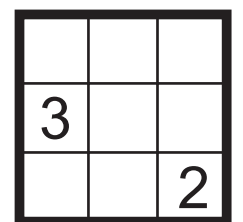
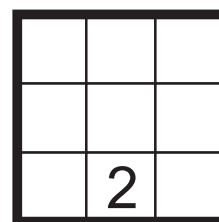
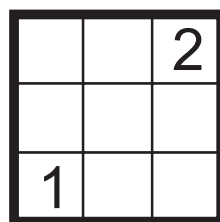
**33**  
points



### Puzzle 4 – Triple Minesweeper

Find eleven (11) mines in each of the grids provided. Numbers indicate how many mines are there in the eight cells surrounding it. No mine can be in a cell with a number. The three grids are linked: any position having a mine in one of the grids cannot have a mine in the other two grids.

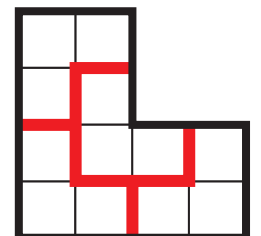
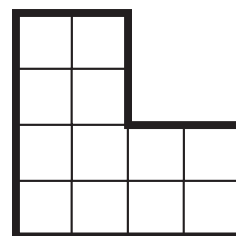
**33**  
points



### Puzzle 5 – Dissection

Divide the given shape into eleven (11) congruent pieces along the grid lines. Pieces may be rotated and reflected relative to each other.

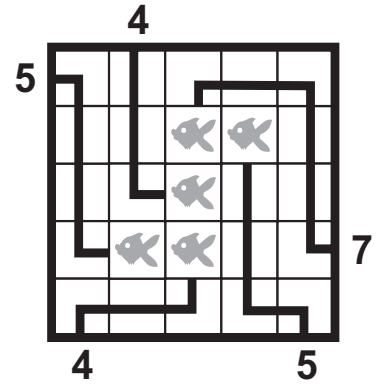
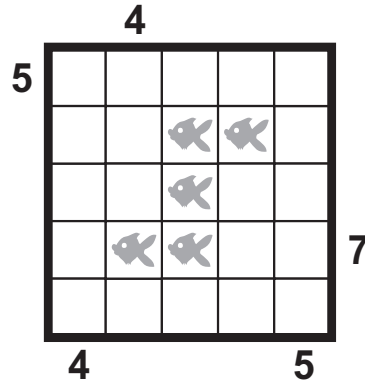
**44**  
points



### Puzzle 6 – Anglers

The grid represents a lake and some squares contain a fish. There are a few anglers sitting around the lake, each of whom have caught a fish. The cords only travel horizontally or vertically and do not cross themselves or each other. Numbers reveal the length of the cord that connects the given angler with his fish.

**44**  
points



### Puzzle 7 – Magic Math

Place digits 1 through 9 into each of the grids so that equations in each row and column hold true. Note that in this puzzle, multiplicative operations do not take precedence over additive ones; instead, calculation proceeds from left to right, e.g.  $2+6 \times 5$  equals to 40 and not 32.

**66**  
points

The outside number in all the equations (i.e. the result rows/columns yield) is divisible by 11 in all cases. In one of the puzzles all results are actually 11. In another one the results are 11, 22 and 33 in an order not specified. In the third puzzle, all six results are different (but still divisible by 11). The order of the puzzles is not known.

For each of the puzzles, two results are given: an 11 and a 33. For the puzzle that only has 11's, the 33 clue is wrong and should in fact be 11.

**Partial scores are available for this puzzle. 11 points awarded for correctly solving any of the small puzzles, provided that the solution found for that small puzzle is part of the solution of the whole puzzle.**

|  |                                    |   |
|--|------------------------------------|---|
| $\square \div \square \times \square = 14$ | $\square \div \square + \square =$ | $\square \div \square \times \square =$ |
| $+ \quad \times \quad +$                   | $+ \quad - \quad \times$           | $+ \quad \times \quad \div$             |
| $\boxed{5} \times \square + \square =$     | $\square + \boxed{1} - \square =$  | $\boxed{9} + \square \div \square =$    |
| $+ \quad + \quad -$                        | $- \quad \times \quad -$           | $- \quad + \quad \times$                |
| $\square \times \square - \square =$       | $\square - \square + \square = 14$ | $\square - \square + \square = 7$       |
| $= \quad = \quad =$                        | $= \quad = \quad =$                | $= \quad = \quad =$                     |
| <b>7</b>                                   | <b>7</b>                           | <b>14</b>                               |

(In the sample puzzle, the magic number 11 is replaced by 7. That is, all results are divisible by 7, and the three puzzles' results are: all 7, 7-14-21, all different. Of course, the order of the puzzles is not given here either, and one of the 14 clues are wrong.)

|  |   |  |
|--|---|--|
| $\boxed{7} \div \boxed{3} \times \boxed{6} = 14$ | $\boxed{4} \div \boxed{2} + \boxed{5} = 7$        | $\boxed{6} \div \boxed{2} \times \boxed{7} = 21$ |
| $+ \quad \times \quad +$                         | $+ \quad - \quad \times$                          | $+ \quad \times \quad \div$                      |
| $\boxed{5} \times \boxed{8} + \boxed{2} = 42$    | $\boxed{9} + \boxed{1} - \boxed{3} = 7$           | $\boxed{9} + \boxed{5} \div \boxed{1} = 14$      |
| $+ \quad + \quad -$                              | $- \quad \times \quad -$                          | $- \quad + \quad \times$                         |
| $\boxed{9} \times \boxed{4} - \boxed{1} = 35$    | $\boxed{6} - \boxed{7} + \boxed{8} = \cancel{14}$ | $\boxed{8} - \boxed{4} + \boxed{3} = 7$          |
| $= \quad = \quad =$                              | $= \quad = \quad =$                               | $= \quad = \quad =$                              |
| <b>21</b> <b>28</b> <b>7</b>                     | <b>7</b> <b>7</b> <b>7</b>                        | <b>7</b> <b>14</b> <b>21</b>                     |

### Puzzle 8 – Nurikabe

Each number in the grid is part of an island. The number represents the number of cells in the island, including the numbered cell itself. The cells that make up an island must be connected horizontally and/or vertically.

Islands cannot touch each other horizontally or vertically; however, they can touch diagonally. The remaining cells represent water and must be painted black. The water cells form a completely connected path around the islands, where successive cells share an edge either horizontally and vertically.

No 2x2 region can be completely covered by water.

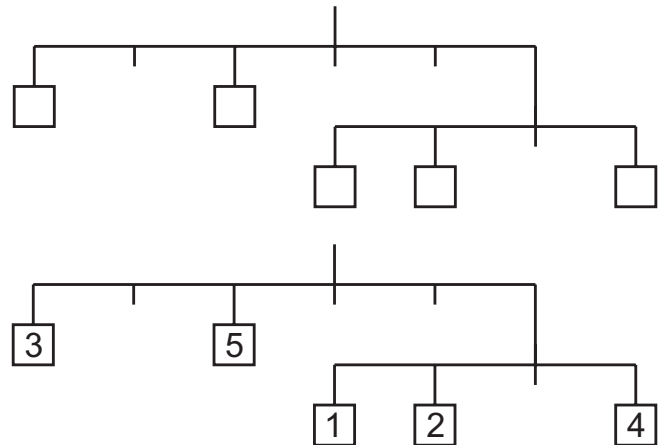
|  |   |   |   |  |
|--|---|---|---|--|
|  | 2 |   | 2 |  |
|  |   |   |   |  |
|  |   | 3 |   |  |
|  | 5 |   |   |  |
|  |   |   |   |  |

|  |   |   |   |  |
|--|---|---|---|--|
|  | 2 |   | 2 |  |
|  |   |   |   |  |
|  |   |   |   |  |
|  |   | 3 |   |  |
|  | 5 |   |   |  |
|  |   |   |   |  |

**66**  
points

### Puzzle 9 – Balance

Fill in numbers 1 through 11 into the empty boxes (denoting weights) so that the entire mechanism is in equilibrium. The total torque at each fulcrum is zero.



**77**  
points

### Puzzle 10 – Multiples Kakuro

Fill in the crossword with digits so that the number appearing in each row or column is divisible by but not equal to the corresponding definition. No number may start with zero.

**77**  
points

|    |  |    |
|----|--|----|
|    |  |    |
| 19 |  | 11 |
| 26 |  |    |
| 18 |  |    |

|    |   |    |
|----|---|----|
|    |   |    |
| 19 |   | 11 |
| 26 | 5 | 2  |
| 18 | 7 | 2  |

### Puzzle 11 – XI Snake

Find eleven (11) snakes in the grid, each of length 11. The snakes cannot touch each other or themselves, not even diagonally. Numbers outside the grid indicate the number in the first cell occupied by a snake seen from outside in that row/column.

The head of each snake is given and marked with a 1. Ignore the colouring of some cells.

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

**77**  
points

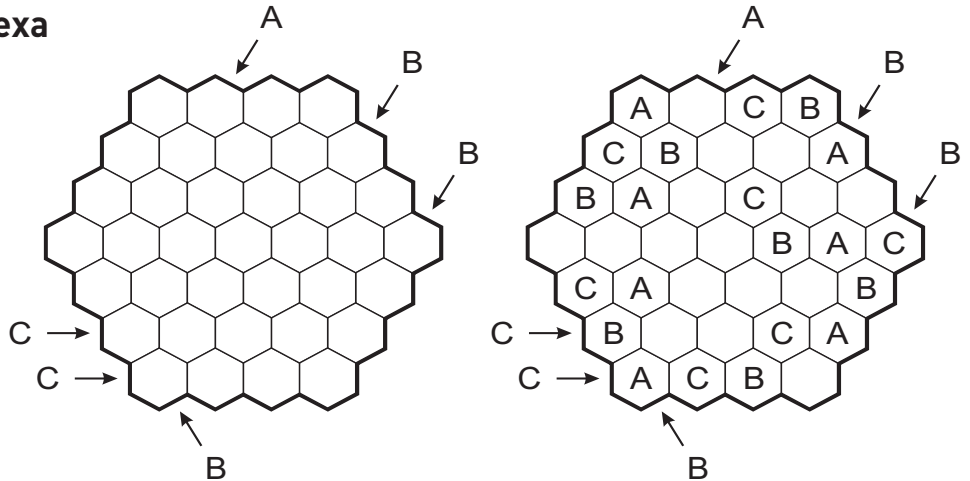
|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
|   | 1 | 8 | 3 | 5 | 8 |   |   |   |   |
| 3 |   |   | 3 | 4 | 5 | 5 |   |   |   |
| 2 | 2 | 1 | 2 |   | 6 | 7 | 8 |   |   |
|   | 3 |   | 1 |   |   |   | 1 |   |   |
|   | 4 | 5 |   |   | 1 | 2 | 3 | 3 |   |
| 6 | 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



Individual part

Puzzle 1 – Easy as second hexa

Put letters A through C (A through D in the larger puzzle) so that all letters are different along any horizontal or diagonal row. Letters outside the grid indicate the second letter to appear in that row from that direction.



15

points

30

points

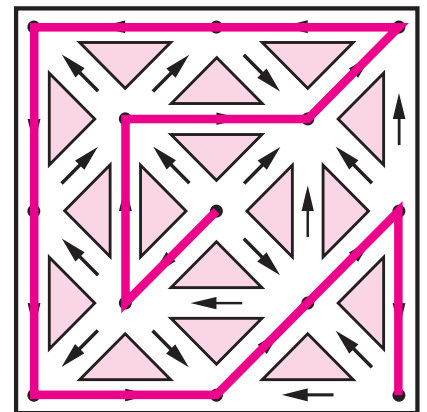
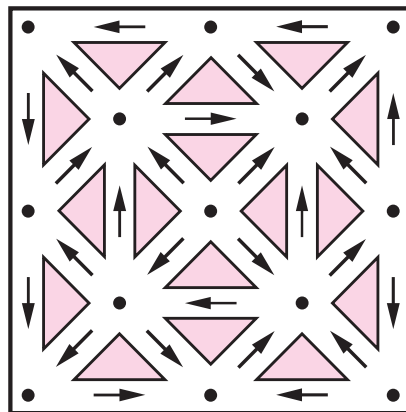
Puzzle 2 – Way out

Start from the centre junction and follow the arrows to pass through all junctions to end up at a boundary junction.

15  
points

15  
points

20  
points



Puzzle 3 – Dotted Snake

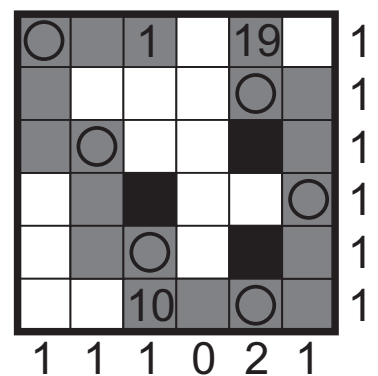
There is a 25 units long (45 units in the bigger grid) snake hiding in the grid.

The body of the snake cannot touch itself, not even diagonally. Every 3rd square (3, 6, 9 etc.) of the has a dot on it. Numbers outside the grid reveal how many dots of the snake are in the corresponding row or column. The head, middle and tail squares of the snake are given. The black squares are not part of the snake.

10  
points

15  
points

35  
points



### Puzzle 4 – Card Sequences

Place the given sixteen cards into the grid. Numbers outside the grid indicate the largest continuous block having a common suit/value, as indicated outside. E.g. for the bottom row, the clues on the left indicate that the longest sequence of clubs is only one in that row but there are three consecutive Jacks, while the clues on the right indicate the longest diamond sequence is a single card and that there are no Kings in that row.

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
|   | ♠ | 1 | 2 | 1 | 0 |   |   |
|   | A | 2 | 1 | 0 | 0 | ♦ | K |
| 0 | 0 |   |   |   |   | 0 | 0 |
| 1 | 0 |   |   |   |   | 3 | 1 |
| 2 | 1 |   |   |   |   | 0 | 2 |
| 1 | 3 |   |   |   |   | 1 | 0 |
| ♣ | J | 1 | 1 | 0 | 1 | ♥ |   |
|   |   | 0 | 0 | 3 | 1 | Q |   |

**40**  
points

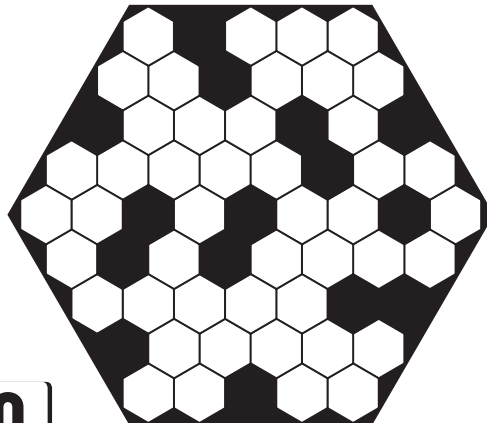
J Q K A

|   |  |  |  |  |
|---|--|--|--|--|
| ♠ |  |  |  |  |
| ♦ |  |  |  |  |
| ♣ |  |  |  |  |
| ♥ |  |  |  |  |

|   |   |    |    |    |    |   |   |
|---|---|----|----|----|----|---|---|
|   | ♠ | 1  | 2  | 1  | 0  |   |   |
|   | A | 2  | 1  | 0  | 0  | ♦ | K |
| 0 | 0 | A♠ | A♥ | Q♠ | Q♥ | 0 | 0 |
| 1 | 0 | A♦ | K♦ | Q♦ | K♣ | 3 | 1 |
| 2 | 1 | K♥ | K♠ | Q♣ | J♣ | 0 | 2 |
| 1 | 3 | A♣ | J♠ | J♦ | J♥ | 1 | 0 |
| ♣ | J | 1  | 1  | 0  | 1  | ♥ |   |
|   |   | 0  | 0  | 3  | 1  | Q |   |

### Puzzle 5 Honey islands

Paint a few more hexagons black to obtain six white areas that do not touch each other and each consists of six connected white hexagons.



**10** points   **20** points   **30** points

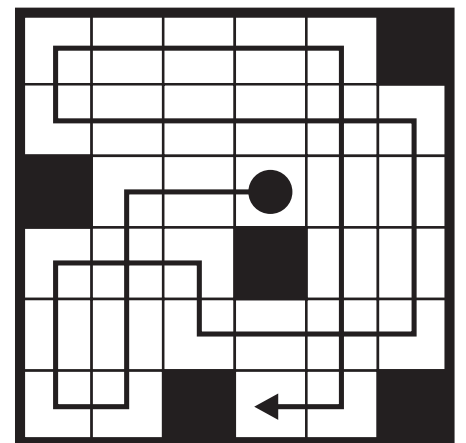
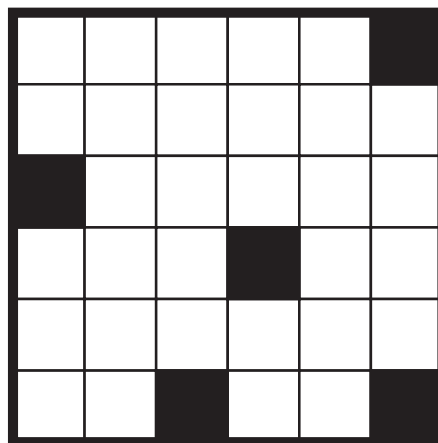
### Puzzle 6 – Tiger in the woods

Draw a path into the figure that starts from an arbitrary white square, only travels horizontally and vertically, and passes through all white squares.

The path may cross itself but it may not overlap itself.

The path is only allowed to take a turn after hitting either a black square or a wall. The starting square must not be visited later, and the finishing square cannot have been visited before.

The last part of the line should hit either a wall or a black square.



**10** points   **20** points   **30** points

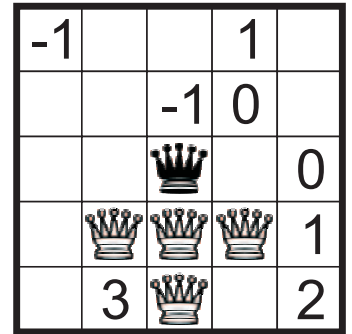
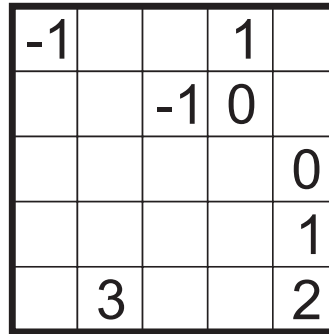
### Puzzle 7 – Queens' Park

Place the given queens in the grid so that none of them stands on a number.

White pieces are considered attacking, whereas Black ones are defending. The given numbers equal to the attack count of their cell, i.e. the number of directions it is attacked from minus the number of directions it is defended from.

Numbers do not block pieces from attacking or defending cells beyond them but other pieces do (note the -1 above the centre or the rightmost 1 in the example, they are not attacked or defended by queens that are blocked).

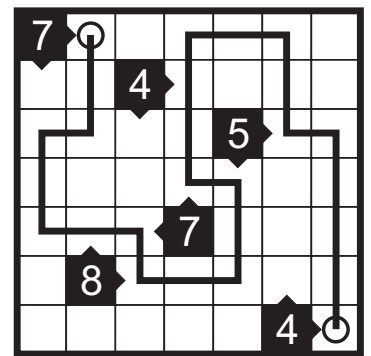
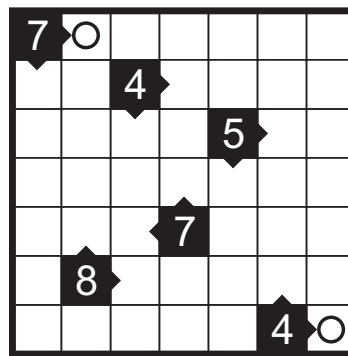
|                     |                     |                     |                     |
|---------------------|---------------------|---------------------|---------------------|
| <b>10</b><br>points | <b>25</b><br>points | <b>35</b><br>points | <b>45</b><br>points |
|---------------------|---------------------|---------------------|---------------------|



### Puzzle 8 – Sea serpent

Draw a serpent into the grid. Its body may touch itself but only diagonally. The squares with numbers represent bidirectional lighthouses; each number reveals the number of squares of the serpent that are visible from the lighthouse in the directions that its arrows are pointing to. The positions of the serpent's head and tail are given.

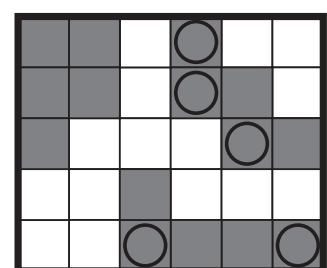
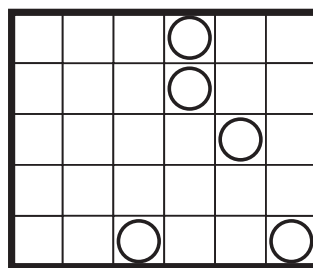
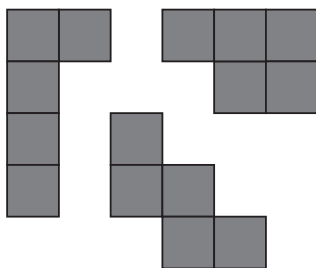
|                     |
|---------------------|
| <b>25</b><br>points |
|---------------------|



### Puzzle 9 – Hungarian Pentomino

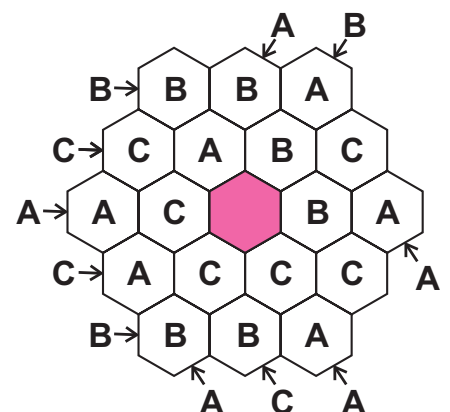
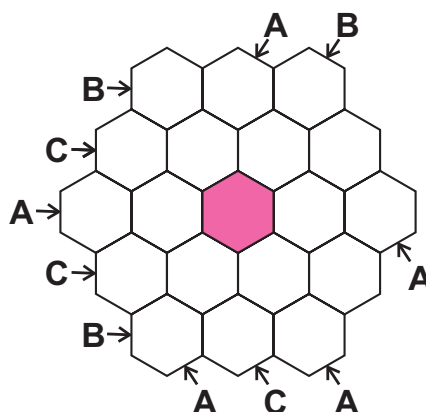
Place the given twelve pentomino pieces into the grid so that they do not touch each other, not even diagonally. Pieces may be rotated but not reflected. Reading rows from left to right, from top to bottom, every third cell occupied by a piece is marked.

|                     |
|---------------------|
| <b>70</b><br>points |
|---------------------|



### Puzzle 10 – Populations

Fill in the grid with letters A, B, C so that there are six of each. Letters around the grid indicate the letter that appears most in that row/diagonal (its count should be strictly higher than that of any other letter).



|                     |                     |                     |
|---------------------|---------------------|---------------------|
| <b>10</b><br>points | <b>25</b><br>points | <b>45</b><br>points |
|---------------------|---------------------|---------------------|

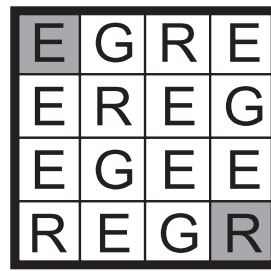




### Puzzle 14 – Password Path

Find a path from the top left corner to the bottom right corner. The path can travel horizontally, vertically or diagonally and it passes through all squares but never crosses itself. Reading the letters in the order they are visited gives the repetition of the letters of the given password.

Password: EGER.



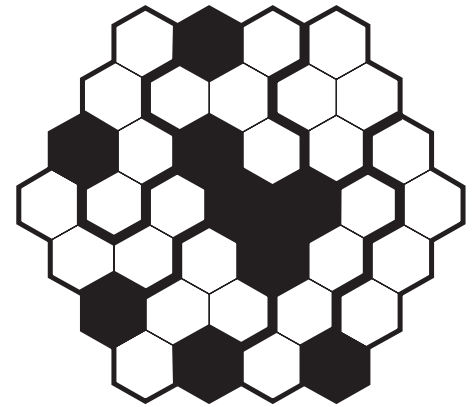
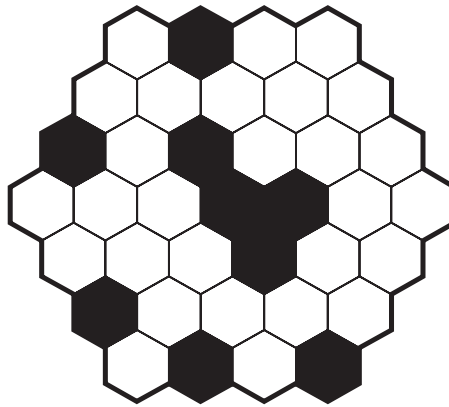
**10**  
points

**25**  
points

**50**  
points

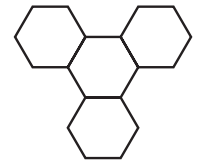
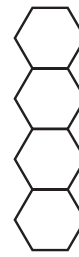
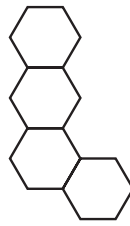
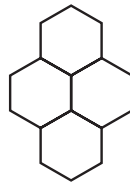
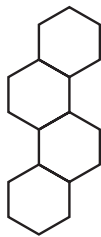
### Puzzle 15 – S-Policy

Place the given shapes into the grid so that they do not overlap each other and no black hexagon is covered. Shapes may be rotated but not mirrored.



**20**  
points

**45**  
points

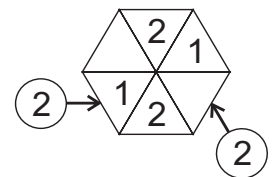
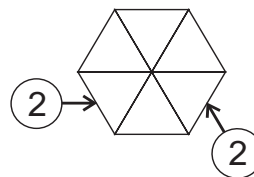


### Puzzle 16 – Tria Skyscrapers

Fill in the grid such that each row and each diagonal direction contains digits through 1-4 exactly once, representing skyscrapers. Numbers around the grid reveal the number of different skyscrapers visible from that direction (taller buildings block smaller ones from being seen).

**20**  
points

**30**  
points

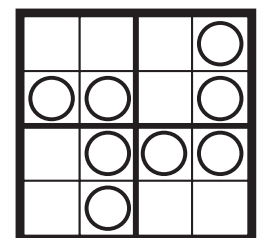
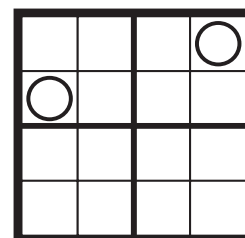


### Puzzle 17 – Windows

Place some circles into the grid such that every bold 2x2 region contains exactly two of them and those two are in cells that are edge adjacent. In the end, cells containing circles will form a single connected figure that does not surround an island of empty cells and does not touch itself diagonally. No 2x2 area, whether or not marked as a bold region, contains four circles or four empty fields.

**20**  
points

**25**  
points





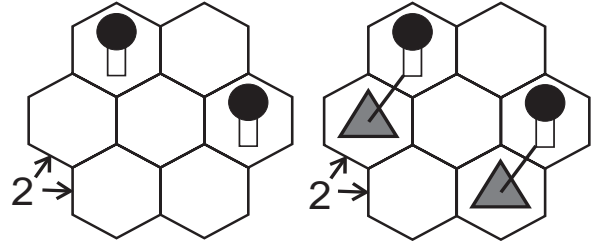
Individual part

**Puzzle 1 – Hexa Tents**

Each tree in the figure has a tent attached to it that has to be in an edge-adjacent hexagon. Tents do not touch each other, not even diagonally. Numbers outside the grid indicate the number of tents visible in the two directions combined, as indicated by the arrows.

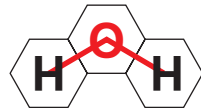
10  
points

15  
points



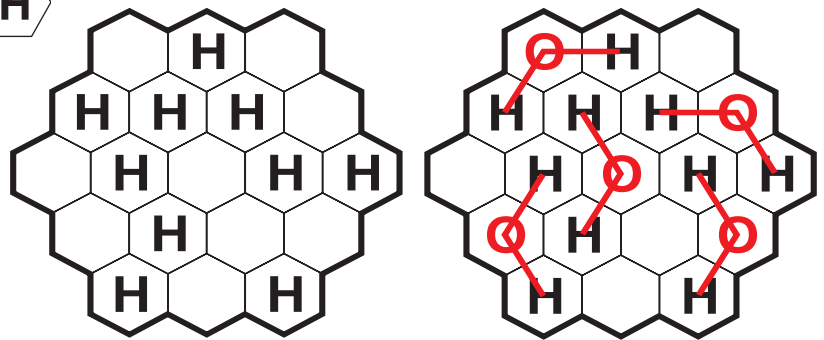
**Puzzle 2 – Hexa H<sub>2</sub>O**

Place some oxygen atoms such that no two of them are in cells that share an edge. These, along with the given hydrogen atoms, will form molecules of water having the given shape. Of course, any atom can only belong to a single molecule.



15  
points

35  
points

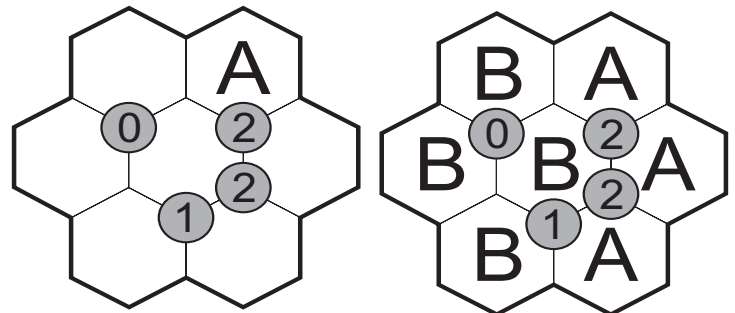


**Puzzle 3 – Master Trio**

Use the given letters to first determine the secret 3-letter code, then fill in the grid so that each number denotes the number of letters around it that are part of the code. E.g. if the code is ABB, the word AAB has two matches.

15  
points

35  
points



**Puzzle 4**

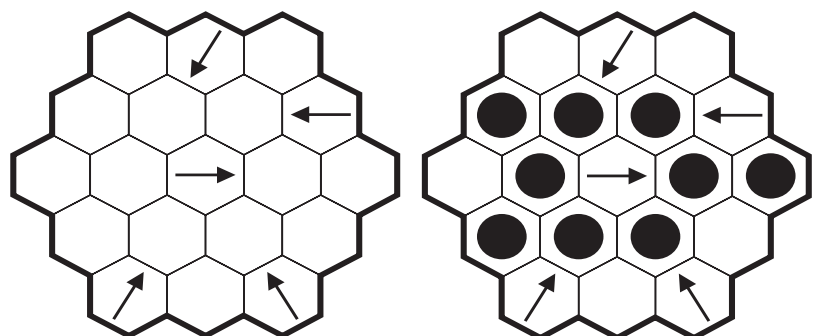
**Pointing at the Crowd**

Mark some cells in the hexagonal grid so that each arrow is pointing to the direction with the most marked cells. That direction, as seen from the cell of the arrow, must have strictly more cells marked than any of the other directions parallel to one of the sides of the hexagon.

15  
points

25  
points

40  
points



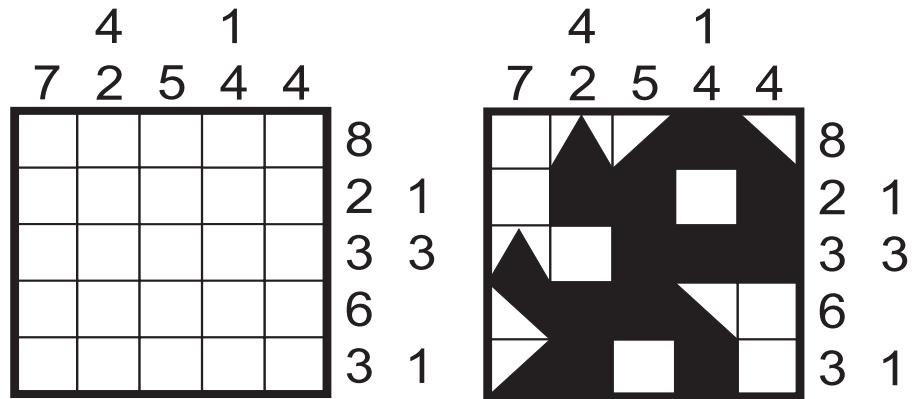
### Puzzle 5 – Japanese Number Castle

Build a single connected castle from the given building blocks, according to the following rules. Triangle shaped blocks are fully supported from below (a triangle does not provide support upwards). Right triangles have both their legs either connecting to other building blocks or stand on the ground. Right triangles may be rotated any possible way, while equilateral triangles can only be built in as roofs, i.e. being fully supported from below.

Numbers outside the grid denote block groups in that row/column and the value of each such block. Two blocks are separated by at least one completely empty cell.

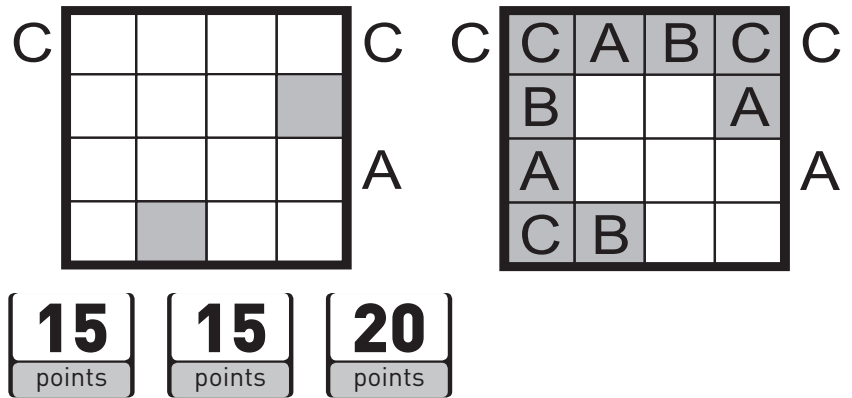
**40**  
points

- ▲ 3 points
- ▴ 2 points
- 1 points



### Puzzle 6 – ABC snake

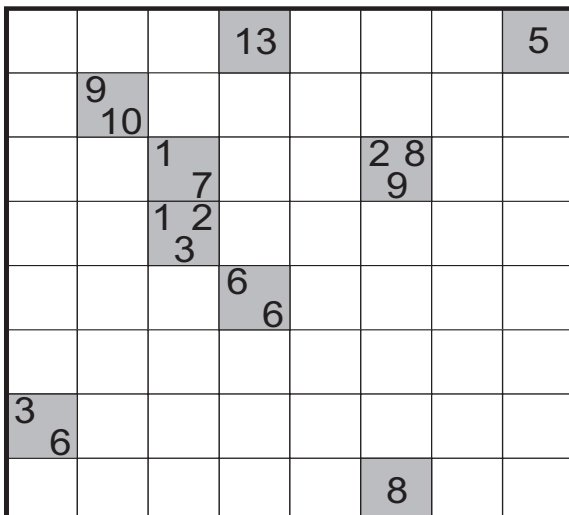
Draw a snake of length 25 into the grid that connects the two grey cells so that it visits letters in the order ...-A-B-C-A-... Numbers along the grid indicate the letter that can be seen first in that row/column from that direction. All given letters are visited by the snake. (Of course, a letter can appear more than once in a row.)



**15** points   **15** points   **20** points

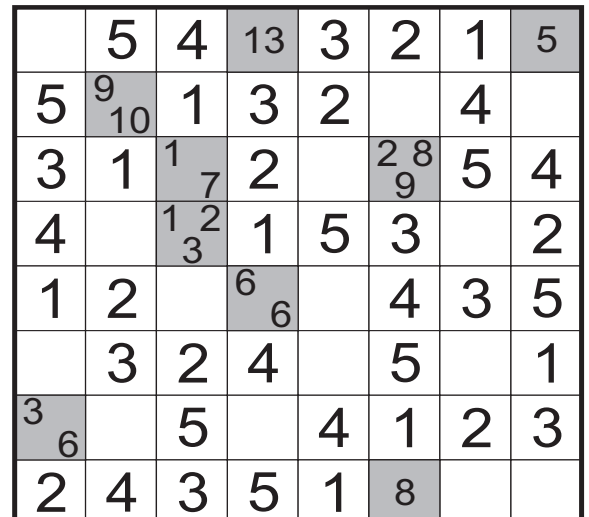
### Puzzle 7 – Hungarian Tapa

Put digits 1 through 5 (1 through 4 in the smaller puzzle) into some of the empty cells so that each row and column contains each digit exactly once. Number(s) in the given cells indicate the sums of cell blocks occupied by digits on its neighbouring cells. If, in any of the clues, there is more than one number given, there must be at least one white cell between the surrounding digit blocks. No digit can be placed onto cells containing clues and no 2x2 square is completely occupied by digits.



**40**  
points

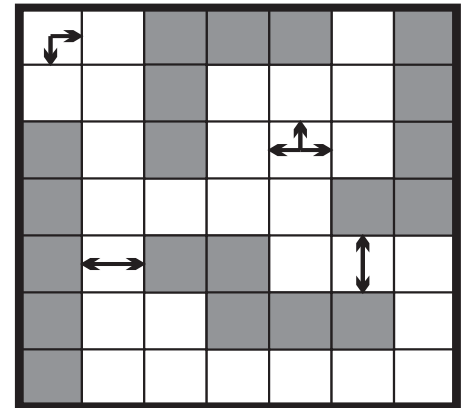
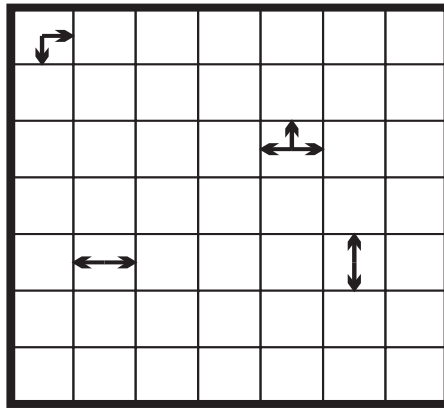
**70**  
points



### Puzzle 8 – Pentopia

Place the given twelve pentomino pieces into the grid so that they do not touch each other, not even diagonally. A cell with some arrows cannot have any pentomino covering it. Arrows denote the direction of the closest pentomino, out of the four (horizontal and diagonal) directions. In case there are at least two such directions, all of them are marked.

**55**  
points



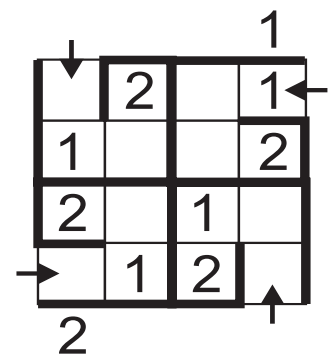
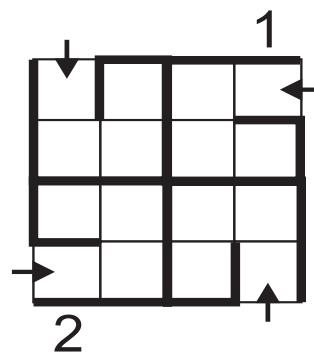
### Puzzle 9 – Sudoku snail

Fill the grid with digit from 1 to 4, so that each digit appears exactly once in every row, column and every 3x3 spiral. Digits should be placed orderly in the spirals, from the entrance to the center. The numbers outside the grid indicate the first seen number from that direction. Some numbers inside the grid or empty squares (“-”) are given.

**35**  
points

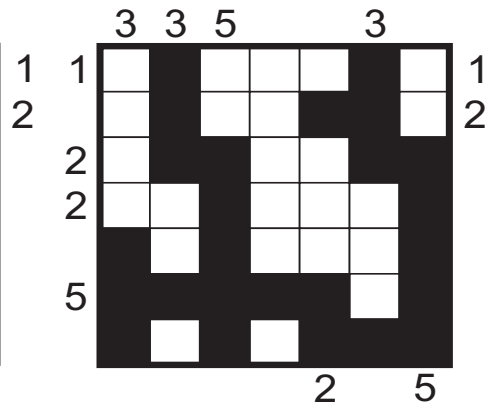
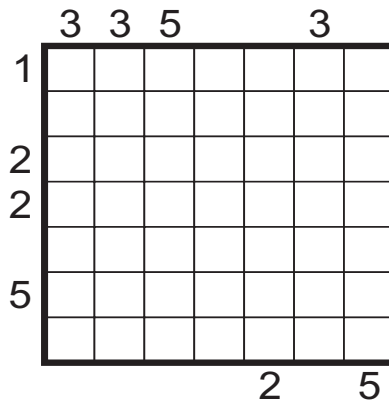
**40**  
points

**55**  
points



### Puzzle 10 – First Seen Coral

Fill in some cells to create a connected shape which does not touch itself, not even diagonally, and does not contain 2x2 fully filled cells. The coral cannot have an island inside it. The clues outside the grids represent the length of the first filled cell block in that direction.



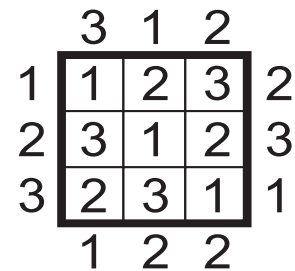
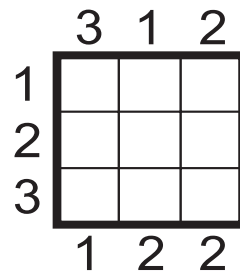
**30**  
points

**40**  
points

**40**  
points

### Puzzle 11 – False Skyscrapers

Put digits 1 through 4 (1 through 5 in the larger puzzle), representing skyscrapers, into the grid so that each row and column contains each digit exactly once. Numbers outside the grid should have indicated the number of buildings seen from that direction in that row/column (with taller buildings blocking smaller ones from being seen). However, all these numbers have been changed, so all clues are false.



**25**  
points

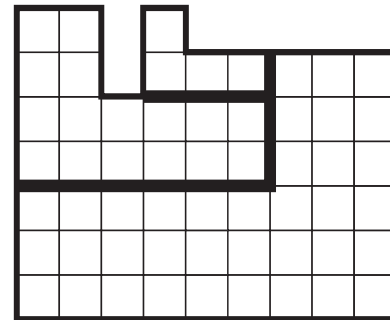
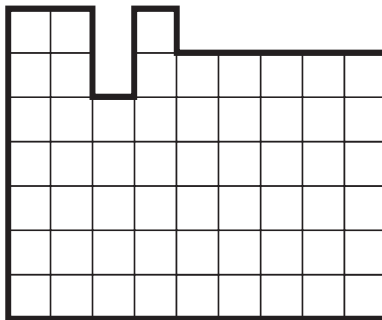
**50**  
points

## Puzzle 12

### Similar dissection

Divide the given shape into similar pieces that are pairwise different in size. Dissection lines can only be on grid lines. Different pieces may be in a rotated and/or reflected position relative to each other.

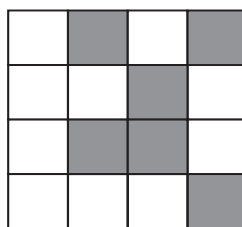
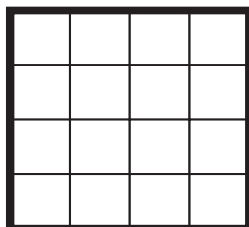
**70**  
points



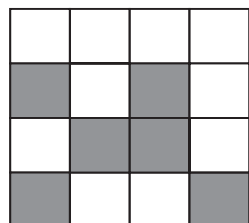
## Puzzle 13 – Afternoon skyscrapers

Put digits 1 through 6, representing skyscrapers, into the grid so that each row and column contains each digit exactly once. At a certain point of time on a sunny Sunday afternoon, when the rays of the Sun are falling in an angle of 45 degrees, we take a look at our skyscrapers and mark them with black and white on the basis whether they are lit by the Sun or another building casts a shadow on them. We have created two such snapshots, with the Sun shining from the North in one of them and from the West in the other (in different times of the year, of course). The resulting two maps are shown to the bottom and to the right of the grid, respectively.

For example, in the first row, which is lit from the left hand side, the third house (of height 3) is white its top floor is in sunlight, but the house of height 2 in the same row is completely in shadow.



|   |   |   |   |
|---|---|---|---|
| 4 | 1 | 3 | 2 |
| 1 | 4 | 2 | 3 |
| 3 | 2 | 1 | 4 |
| 2 | 3 | 4 | 1 |



**30**  
points

**65**  
points

**6<sup>th</sup> World Sudoku Championship**  
6-10 November 2011



**20<sup>th</sup> World Puzzle Championship**  
8-13 November 2011

Eger, Hungary

**Individual part**

**Part 14  
Best of**

17:20–18:20  
**60 minutes – ??? points**

Well, it seems we were a little too productive in terms of puzzles. For most of the types in this WPC, we ended up having spare puzzles. Therefore we offer you a chance to select your favourite puzzles for the last round! For each round, there will be feedback sheets on which you can mark the puzzles you liked best. We will then do our best to make sure that your favourite ones are included in this farewell round.

There will be no separate instructions booklet for this round as all the puzzles will have appeared in a previous rounds. For each of the puzzles, we will only indicate the round and puzzle number so that it is easy to refer to the instructions booklet (e.g. an ABC connection will be marked as “Part 1 – Puzzle 5”). The order of the puzzles will be identical to the order in which they appear in the instructions booklet.

**6<sup>th</sup> World Sudoku  
Championship**  
6-10 November 2011



**20<sup>th</sup> World Puzzle  
Championship**  
8-13 November 2011

**Part 15  
Wrong puzzles!**

09:00–10:00  
**60 minutes – 1200 points**

**Team part**

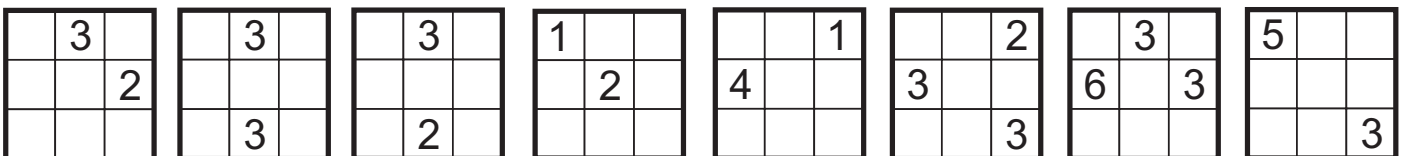
Every WPC organiser's worst nightmare is to have wrong puzzles during their competition, and there is always a possibility for that to be the case. We prefer certainty over taking chances: we made completely sure that we do have some wrong puzzles!

In this round, teams will receive eight wrong puzzles: they either have multiple solutions or none at all. However, we will also provide a repair kit to fix all of them. The repair kit will consist of eight paper tiles. Each paper tile will contain a 4 by 4 grid with some cells containing a number. The team's task is to first find out how to put all these tiles onto the puzzles so that all of them become correct, then solve all these puzzles.

Paper tiles cannot be rotated or flipped over, their correct orientation will be obvious by looking at the numbers on them. They can be placed anywhere in a puzzle, provided that the full 4 by 4 tile is within the boundaries of the puzzle it is on top of (in case of puzzles with clues outside the grid, e.g. Skyscrapers, the tile must be placed within the grid itself). The content of the 4 by 4 area of the original puzzle that the tile covers should be ignored.

Partial scores are available in this round on a per puzzle basis. However, points are only awarded for any puzzle if the solution found by the team is part of the correct solution of the whole round. It may be possible for some puzzles to be solvable with more than one tile or more than one placement of tiles, but there is only one way to put the tiles so that all puzzles are solvable.

**The repair kit**

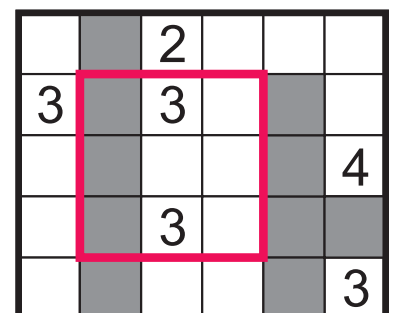
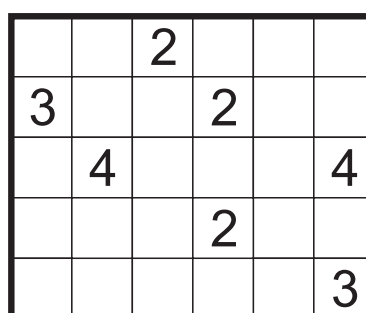


**Puzzle 1  
Minesweeper Pento**

Place all twelve pentomino pieces into the grid so that they do not touch each other, not even diagonally. Pieces may be rotated and/or reflected. Numbers in the grid indicate the number of cells around them (diagonal adjacency included) occupied by a pentomino piece.



**150**  
points



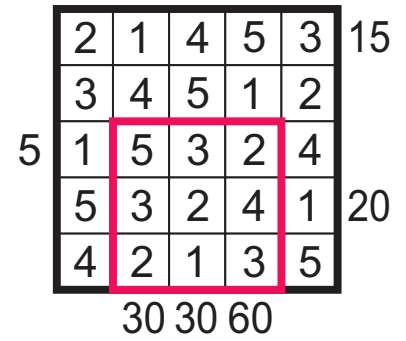
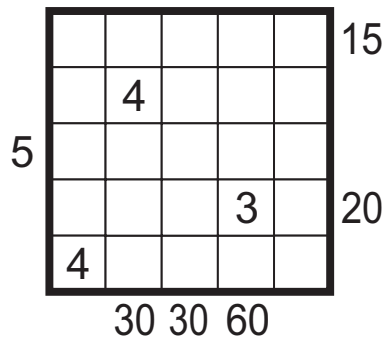


## Puzzle 2

### Product Skyscrapers

Put digits 1 through 8, representing skyscrapers, into the grid so that each row and column contains each digit exactly once. Numbers outside the grid indicate the product of numbers on the buildings that can be seen from that direction in that row/column (with taller buildings blocking smaller ones from being seen).

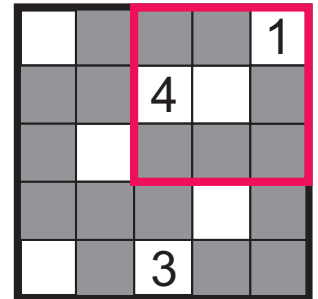
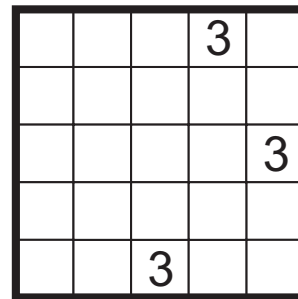
**150**  
points



## Puzzle 3

### Tapa restoration

This is a Tapa version with missing clues. Firstly, for each cell with some clues in it, put in an extra number greater than zero. Secondly, solve the resulting correct Tapa puzzle. That is, paint some cells black to create a continuous wall. Number/s in a cell indicate the length of black cell blocks on its neighbouring cells. If there is more than one number in a cell, there must be at least one white cell between the black cell blocks. Painted cells cannot form a 2x2 square or larger. There are no wall segments on cells containing numbers.

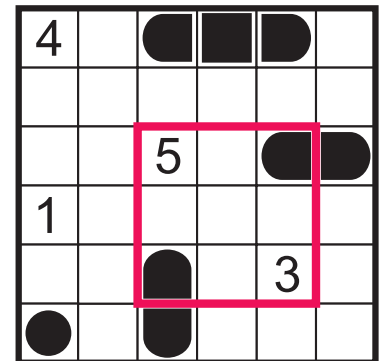
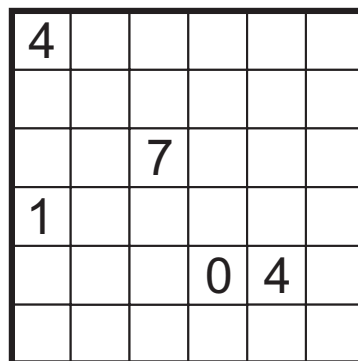


**150**  
points

## Puzzle 4

### Battleships and Lighthouses

Place the given fleet into the grid so that the ships do not touch each other or the numbers, not even diagonally. Numbers represent lighthouses, each of them indicates the number of cells in its row and column occupied by ships. Lighthouses do not block other lighthouses' light. Additionally, even the lighthouses do not touch other, not even diagonally.



**150**  
points



### Puzzle 5

#### Nurikabe

Each number in the grid is part of an island. The number represents the number of cells in the island, including the numbered cell itself. The cells that make up an island must be connected horizontally and/or vertically.

Islands cannot touch each other horizontally or vertically; however, they can touch diagonally. The remaining cells represent water and must be painted black. The water cells form a completely connected path around the islands, where successive cells share an edge either horizontally and vertically.

No 2x2 region can be completely covered by water.

|   |   |   |  |   |
|---|---|---|--|---|
|   |   | 2 |  |   |
|   | 4 | 1 |  |   |
| 3 |   |   |  |   |
|   |   | 2 |  | 3 |
|   |   |   |  |   |

|  |   |   |  |   |
|--|---|---|--|---|
|  | 3 |   |  |   |
|  |   | 2 |  |   |
|  |   |   |  |   |
|  |   | 2 |  | 3 |
|  |   |   |  |   |

**150**  
points

### Puzzle 6

#### Arrows

Put an arrow into each of the empty cells so that every digit equals to the number of arrows pointing to it. The direction of the arrows can be horizontal, vertical or diagonal, and each arrow has to point at least one number.

**150**  
points

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

|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 3 | 0 | 0 | 1 |
| 0 | 1 | ↖ | ↘ | 0 |
| 0 | ↑ | 2 | ↖ | 0 |
| 1 | ↗ | ← | ↘ | 0 |
| 1 | 0 | 0 | 0 | 1 |

### Puzzle 7 - Fillomino

Divide the grid into several regions along the grid lines. All given numbers indicate the area of the region they are in. It is possible for a region to contain multiple numbers or none at all. Two regions of identical size cannot touch each other by edge, but they can touch each other diagonally.

**150**  
points

|   |   |   |   |   |
|---|---|---|---|---|
|   | 6 | 2 |   | 2 |
|   |   |   |   |   |
| 2 |   |   |   |   |
|   |   |   |   |   |
| 2 | 5 |   | 3 | 6 |

|   |   |   |   |   |
|---|---|---|---|---|
| 6 | 6 | 2 | 1 | 2 |
| 2 | 6 | 2 | 6 | 2 |
| 2 | 6 | 3 | 6 | 6 |
| 6 | 6 | 3 | 3 | 6 |
| 2 | 2 | 1 | 6 | 6 |

### Puzzle 8

#### Tren

Place some blocks into the grid, having size either 2x1 or 3x1. Each number in the grid is part of a block and indicates the number of moves possible for that block. Blocks can only move towards the direction of their shorter edge.

**150**  
points

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

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

**6<sup>th</sup> World Sudoku  
Championship**

6-10 November 2011



**20<sup>th</sup> World Puzzle  
Championship**

8-13 November 2011

## Individual part

The top ten competitors will advance to the playoff that will contain nine puzzles. Puzzlers will receive some time advantages based on their ranking during the two days of competition.

The ten puzzlers start solving their puzzles at ten columns of tables, each of them set up to be moving ahead along a column, similarly to a relay. Upon solving a puzzle, a competitor can move one table ahead where the next puzzle awaits them. However, the fourth row of tables only contain seven tables, so the last three puzzlers to get past three puzzles correctly will be eliminated at that stage. Similarly, after three more puzzles, the number of tables shrinks again, from seven to five. Finally, the last three

puzzles on the last three rows of tables will decide on ranking between the top five.

At all times, a marker will be sitting next to each puzzler, immediately checking each puzzle. After finishing a puzzle, the paper should be handed over to the marker who marks it. This will take a minute, regardless of the puzzle and whether it was solved correctly. Once the minute is up, the puzzle is returned to the solver. If it was wrong, they have to start solving it again (or correcting it), the process of marking it again will be the same. If it was correct, the puzzler can immediately move to the next table. More information will be given shortly before the event.

## Part 16 Playoff

11:00–12:00  
60 minutes