LOGIC MASTERS Deutschland e.V.

MEMBER OF WORLD PUZZLE FEDERATION

Instruction booklet for the qualifying round of Logic Masters 2012

On Saturday, April 21st, the official contest file will be available for download. Make sure you have read and understood the rules of the contest.

Welcome to the qualification round for the Logic Masters 2012! We hope you enjoy the competition, regardless of whether you compete seriously or just for fun.

The contest will consist of 20 puzzles, some of them being extremely difficult. We believe most puzzlers will not be able to solve all of them in time. Solve those puzzles you can solve and skip the others; if you have time left, you can always come back to them.

The points for the puzzles have been assigned according to their difficulty. You may use this information to decide which puzzles to try first. However, keep in mind your estimation of a puzzle's difficulty may differ from ours.

We wish you good luck, enjoy the puzzles!

Last minute changes:
If there are any changes or clarifications, they will be announced in our forum at
http://forum.logic-masters.de/showthread.php?tid=963

Remember:

- Wrong answers will yield a penalty of 5 points.
- Incorrect answer keys for an otherwise correct solution may be accepted. However, in such a case only 80% of the puzzle's points will be given.
- You may enter your answer keys at any time, to avoid time trouble at the end of the contest. Note that late answers will yield a penalty of 1 point per 8 seconds.
- You are solely responsible for sending your answers in time.
- You must solve the qualification puzzles without outside help. Computer programs, Sudoku solvers or similar are not allowed.

Answer key:
Please keep in mind the following guidelines when entering your answer keys:

- If not specified differently, enter your solution from top to bottom.
- For clarity's sake, you may use commas and spaces in your answer keys; they have no bearing on the correctness of your solutions.
- The solution form does not distinguish between capital and lower case letters.

Instructions

The following instructions are taken directly from the contest file; only the diagrams have been removed. Instead of them, small examples are shown. These examples will not be found in the test file. You should read and understand the instructions and examples before the test.

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1. Fillomino 5 points

Dissect the diagram into areas and write a number in every field. The numbers in one area have to be the same and give the number of fields in that area. Areas of same size may not touch horizontally or vertically, but can diagonally. Given numbers may belong to the same area, and it's possible that there are areas where no number is given – even with larger numbers than the ones shown.

Example:



Answer key: Enter the content of the two rows marked with arrows from left to right.

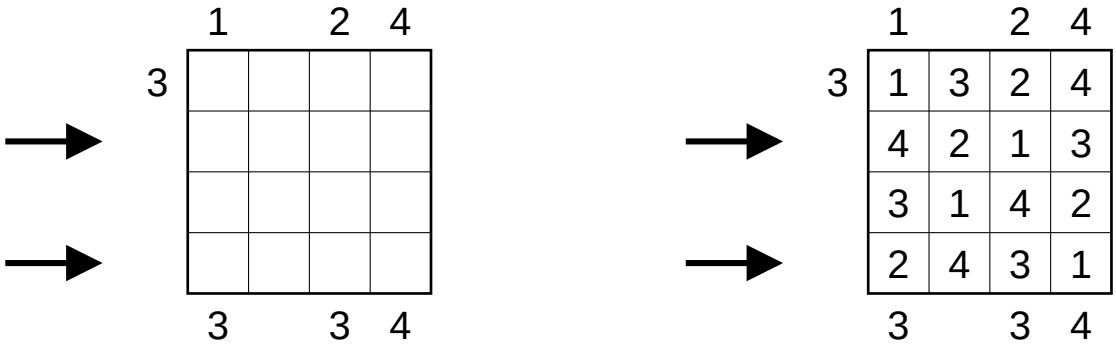
In the example the answer key would be: 2343, 2443

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2. Skyscrapers with mixed information 5 points

Enter a skyscraper of size 1 to 6 into each cell, in a way that in every row and every column every size appears exactly once. The numbers at the borders give either the size of the first skyscraper or how many skyscrapers are visible from that direction; lower skyscrapers are hidden by larger ones.

Example (with height 1 to 4):



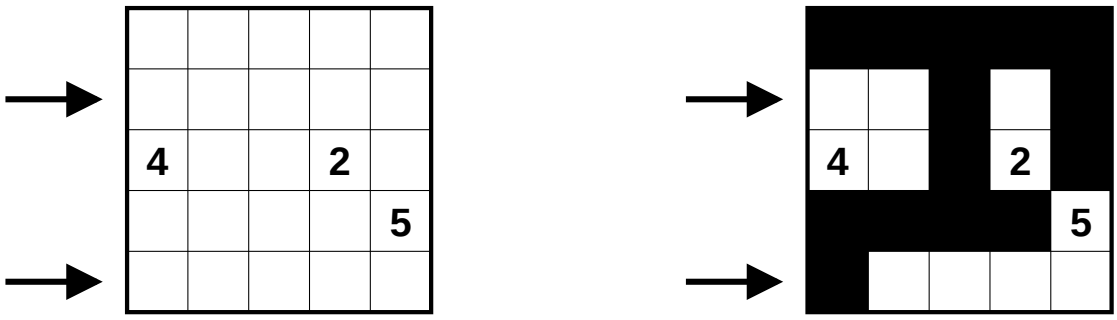
Answer key: Enter the content of the two rows marked with arrows from left to right.

In the example the answer key would be: 4213, 2431

3. Islands 10 points

Blacken some of the cells in the diagram in a way, that all black cells are connected and no 2×2 area is blackened. The remaining white cells are islands. Every island contains exactly one number which denotes the size of that island. Cells with numbers may not be blackend.

Example:



Answer key: Enter the content of the two rows marked with arrows from left to right; use S for a black cell and and W for a white cell (and cells with numbers).

In the example the answer key would be: WWSWS, SWWWW

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4. Arrows with Numbers 10 points

Write a digit into each arrow such that each digit indicates the number of different digits the arrow is pointing at. For arrows pointing in more than one direction, the digits from all these directions are considered together.

Example:



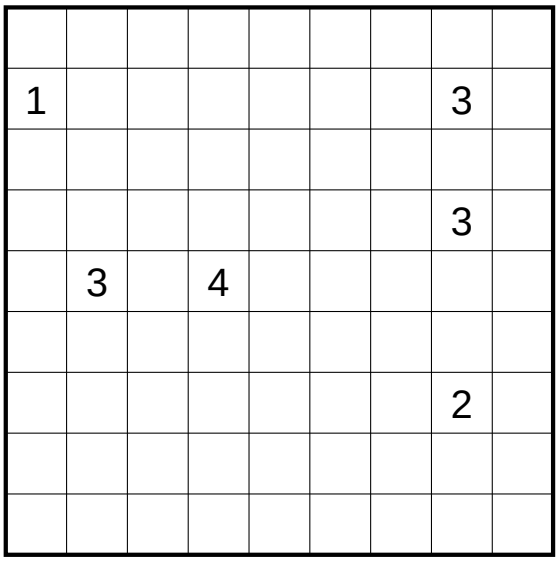
Answer key: Enter the content of the two rows marked with arrows from left to right.

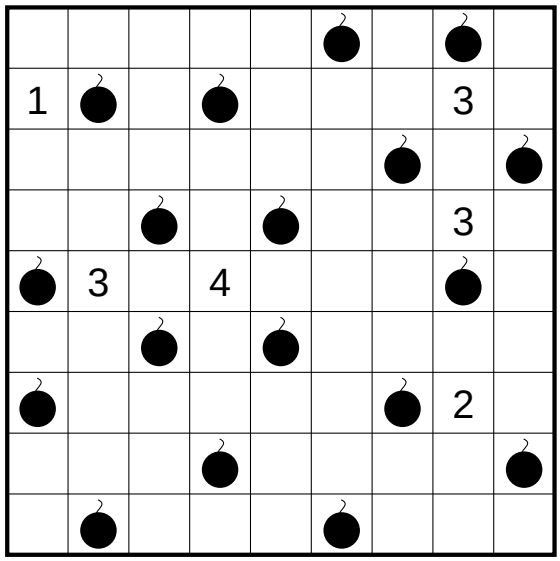
In the example the answer key would be: 212, 122

5. Double Mine — 15 points

Place some mines into the diagram in a way, that every row and every column contains two mines and no two mines touch, not even diagonally. The numbers give the number of mines in the adjacent cells. Cells with a number may not contain a mine.

Example:





Answer key: Enter from top to bottom for every row the number of cells between the two mines.

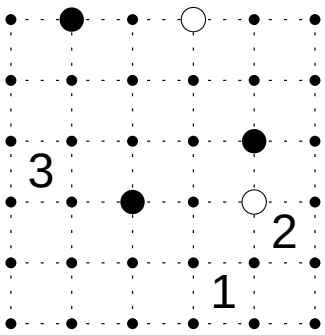
In the example the answer key would be: 1, 1, 1, 1, 6, 1, 5, 4, 3

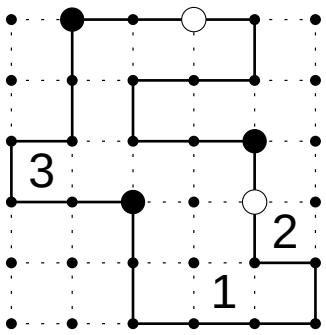
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6. Masyu-Fences — 15 points

Draw a closed loop along the dotted lines. Not all edges have to be used. The numbers in the cells give the number of connected edges, that are used by the loop. The loop may not touch or cross itself. The path must turn at every black circle but cannot turn immediately before or after and the path cannot turn at any white circle but must turn immediately before and/or after.

Example:





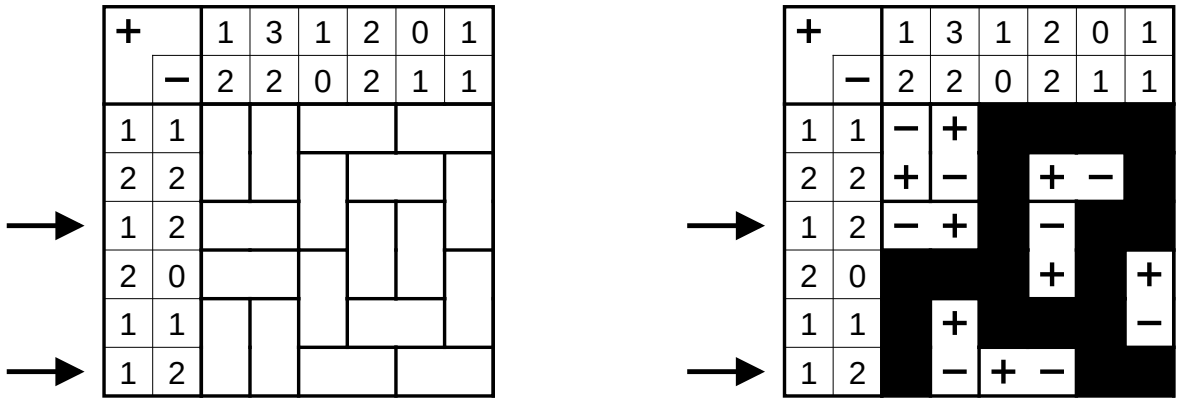
Answer key: Enter for all areas, that are outside the loop, the number of cells used by that area. Start at the top left and go on clockwise.

In the example the answer key would be: 2, 6, 4

7. Magnets — 20 points

The grid is made up of magnetic and non-magnetic plates. Each magnetic plate has two halves: one positive (+) and one negative (−). Halves with the same symbol cannot be horizontally or vertically adjacent. The numbers outside the grid indicate how many magnetic halves of each kind can be found in that row or column.

Example:



Answer key: Enter the content of the two rows marked with arrows from left to right; use + and −, as well as N for neutral halves.

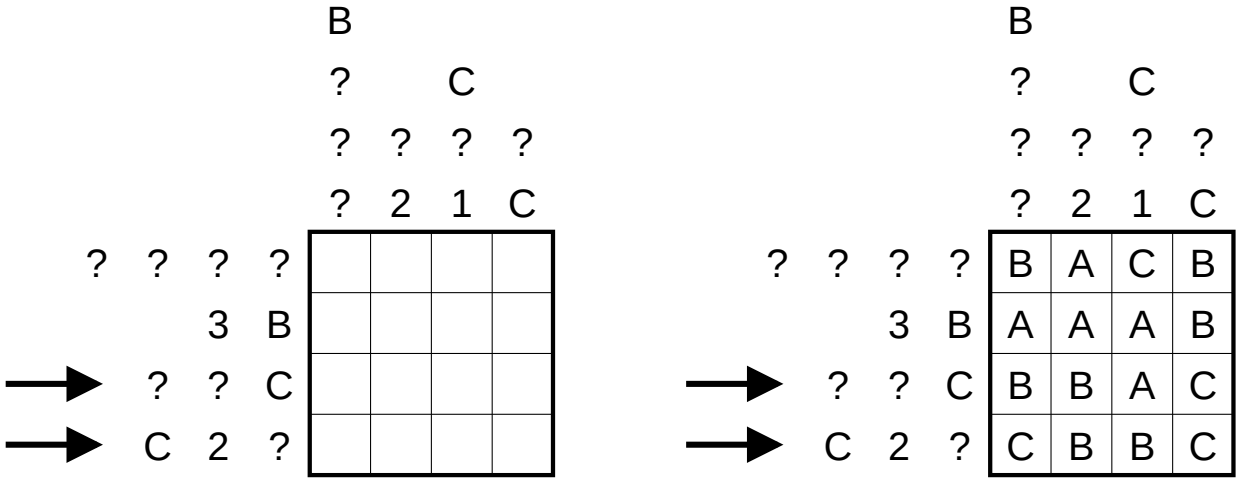
In the example the answer key would be: −+N−NN, N−+−NN

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8. ABC-box — 20 points

Write a letter A, B or C into each cell of the diagram. The clues at the border give the letters in that row or column in the correct order. Every clue denotes one block of equal letters. A letter tells which letter this block is made of, a number gives the size of the block and a question mark indicates that neither of these pieces of information is given.

Example:



Answer key: Enter the content of the two rows marked with arrows from left to right.

In the example the answer key would be: BBAC, CBBC

9. Urn Puzzle 20 points

Put the letters from A to Z (without Q) into the five urns so that each urn contains five letters. If one letter is taken from each urn and rearranged then the words in the word list can be made.

Example (with the letters A, B, D, E, I, N, R, S, W and 3 urns):



Wordlist: BAR, BEI, DAS, DER, DIN, EID, WER

Answer key: The letters in the urn with the I in alphabetical order, followed by the letters in the urn with the E in alphabetical order.

In the example the answer key would be: IRS, AEN

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10. Galaxies 20 points

Dissect the diagram along the grid lines into areas. Every area has to contain a circle and has to have 180 degree rotational symmetry about the circle. Ignore the letters in the circles, they are only needed for the solution code.

Example:



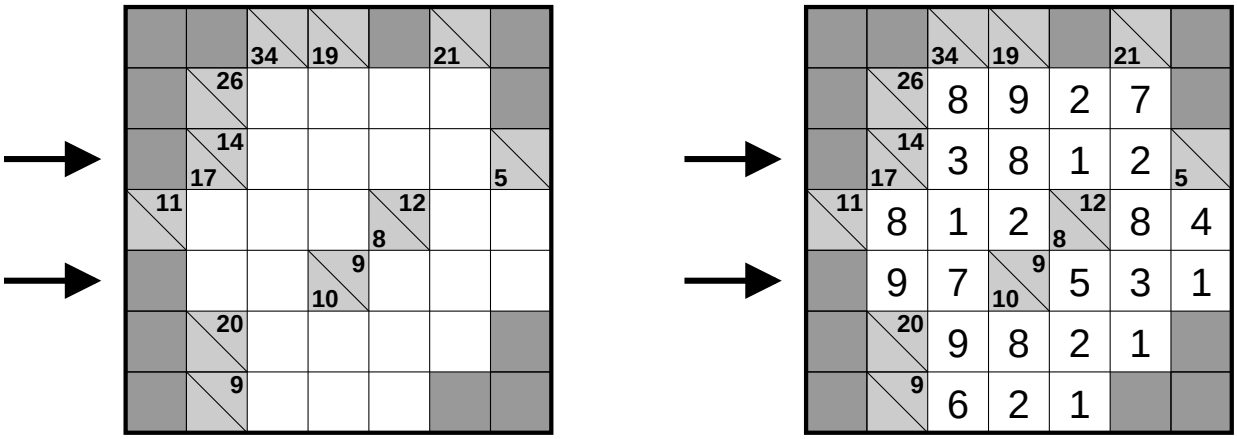
Answer key: Enter the number of cells of all areas with circles with letters in alphabetical order.

In the example the answer key would be: 2, 5, 4

11. Incomplete Kakuro 25 points

Write the digits from 1 to 9 into the fields. The description of a "word" gives the sum of all digits in this "word". In every "word" each digit may occur only once. Some descriptions are missing; they are not needed.

Example:



Answer key: Enter the content of the two rows marked with arrows from left to right. Ignore gray cells.

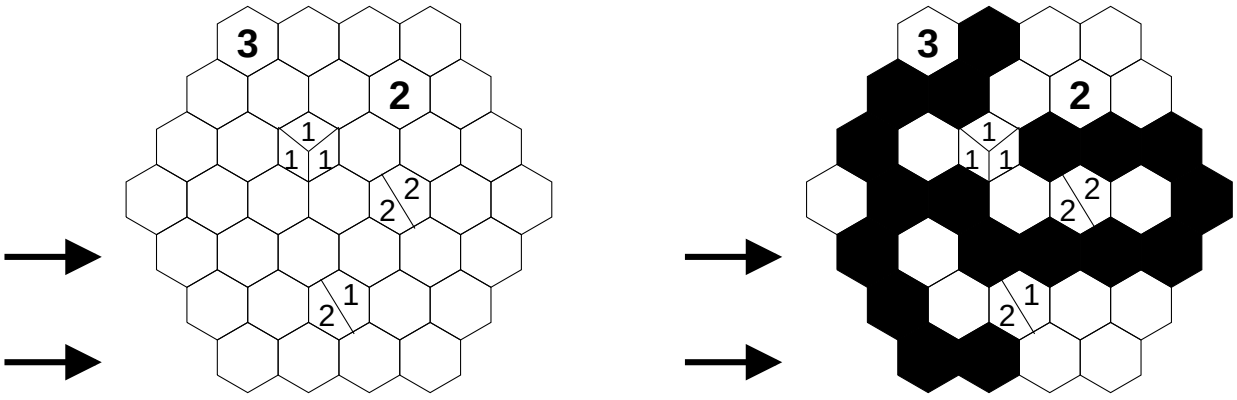
In the example the answer key would be: 3812, 97531

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12. Hexagonal Tapa 25 points

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 three hexagons meeting at a point. There are no wall segments on cells containing numbers.

Example:



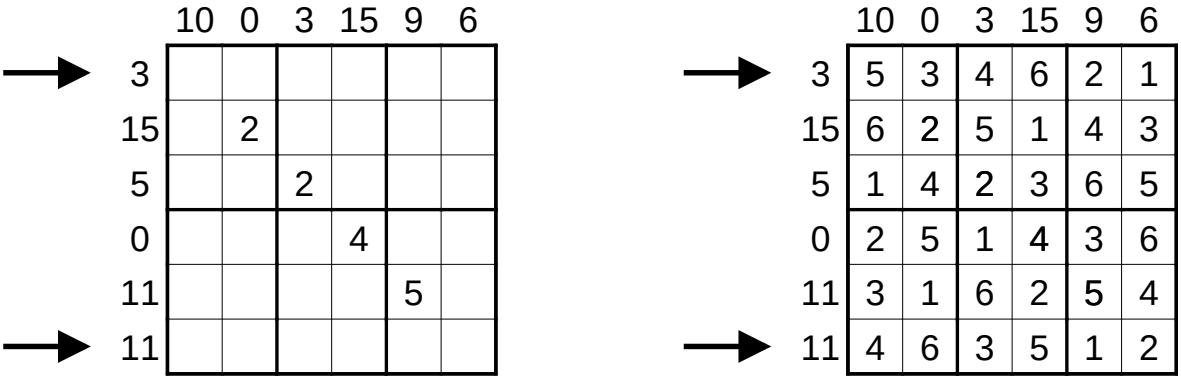
Answer key: Enter the content of the two rows marked with arrows from left to right; use S for a black cell and W for a white cell.

In the example the answer key would be: SWSSSS, SSWW

13. In-the-Shadow-of-9-Sudoku 25 points

Enter numbers from 1 to 9 into the diagram, such that in every row, column and bold bordered area each digit appears exactly once. The numbers at the border give the sum of the numbers, that are beyond the 9 in that row or column.

Example (in the shadow of 6):



Answer key: Enter the content of the two rows marked with arrows from left to right.

In the example the answer key would be: 534621, 463512

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14. Particle zoo 30 points

Draw a laser beam into the grid, that splits at the places marked with a star (see below for details), that nowhere crosses or touches itself. The arrows show, where the beam enters and leaves the grid. Place some mirrors at some intersections of the grid, such that every mirror is hit by the laser beam exactly once. The beam is reflected by the mirror at 90° angle.

The beam uses every intersection with a star. At this place the beam splits into two with the new breams deflected 45 degrees either side of the original line of travel of the beam.

The numbers on the left and top tell you how often the laser beam passes through a cell of that row/column. The numbers on the right and bottom tell you how many mirrors you have to put on the corresponding line.

Example:



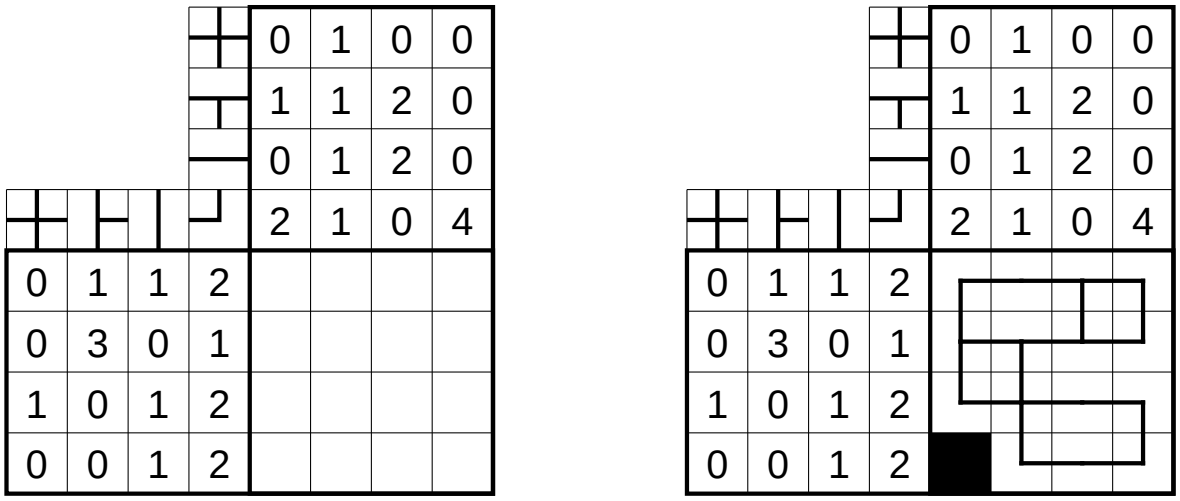
Answer key: Enter for every arrow, that points outside the grid, the number of mirrors used for that part of the beam. Start at the position of the arrow, that points inside the grid and continue clockwise.

In the example the answer key would be: 2, 1, 1, 4

15. Subway — 30 points

Draw a map of an underground of a city (with horizontally and vertically lines from centre to centre of the fields). At the centre of a field the lines may turn or branch. The whole map is connected. There are no dead ends. The underground cannot leave the grid. The numbers at the borders tell, how often the corresponding shape is used in that row or column. The pieces may be rotated. Fields may stay empty.

Example:



Answer key: For every row enter the number of lines, that leave that row downwards.

In the example the answer key would be: 3, 2, 2

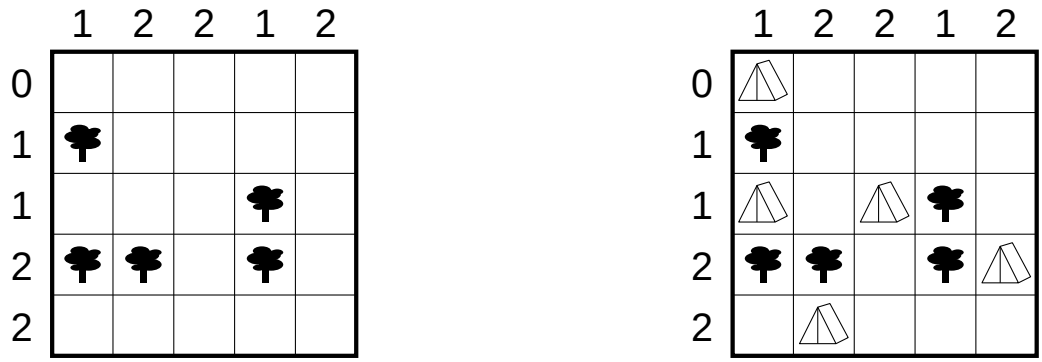
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16. Tents – off Target — 30 points

Enter tents into some of the fields so, that every tree belongs to exactly one tent that is located horizontally or vertically adjacent. Tents do not touch each other, not even diagonally. The numbers at the borders give the number of tents in that row or column.

Note: All numbers are off target, which means that they are either one smaller or larger than they should be.

Example:



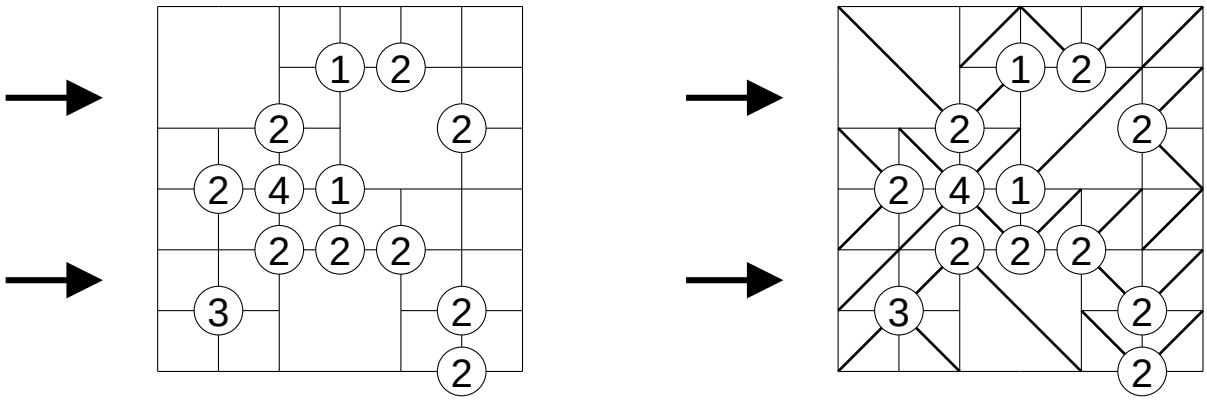
Answer key: Enter for every row the number of tents in that row.

In the example the answer key would be: 1, 0, 2, 1, 1

17. Slalom with Large Cells 35 points

Put a diagonal wall into every field in a way that no completely closed areas occur and all groups of lines are connected with the edge of the grid in at least one place. The numbers in the circles tell you, how many walls touch this circle.

Example:



Answer key: Enter the content of the two rows marked with arrows from left to right; use O for a wall, that goes from bottom left to top right and U for a wall, that goes from top left to bottom right. Treat large cells like one cell.

In the example the answer key would be: UOOO, OOUUO

18. Four Times as Easy as. . . 40 points

The puzzles consists of four diagrams with variations of "as easy as puzzles", that are connected with small numbers. In some cells there are small numbers. These cells may not be empty, cells with the same number have to contain the same letter.

In all four diagrams the following rule is true: Enter the letters from A to C into the diagram so that in every row and every column every letter occurs exactly once.

The first diagram (top left) contains a normal as easy as: The letters at the borders indicate the letter that comes first in the corresponding row or column.

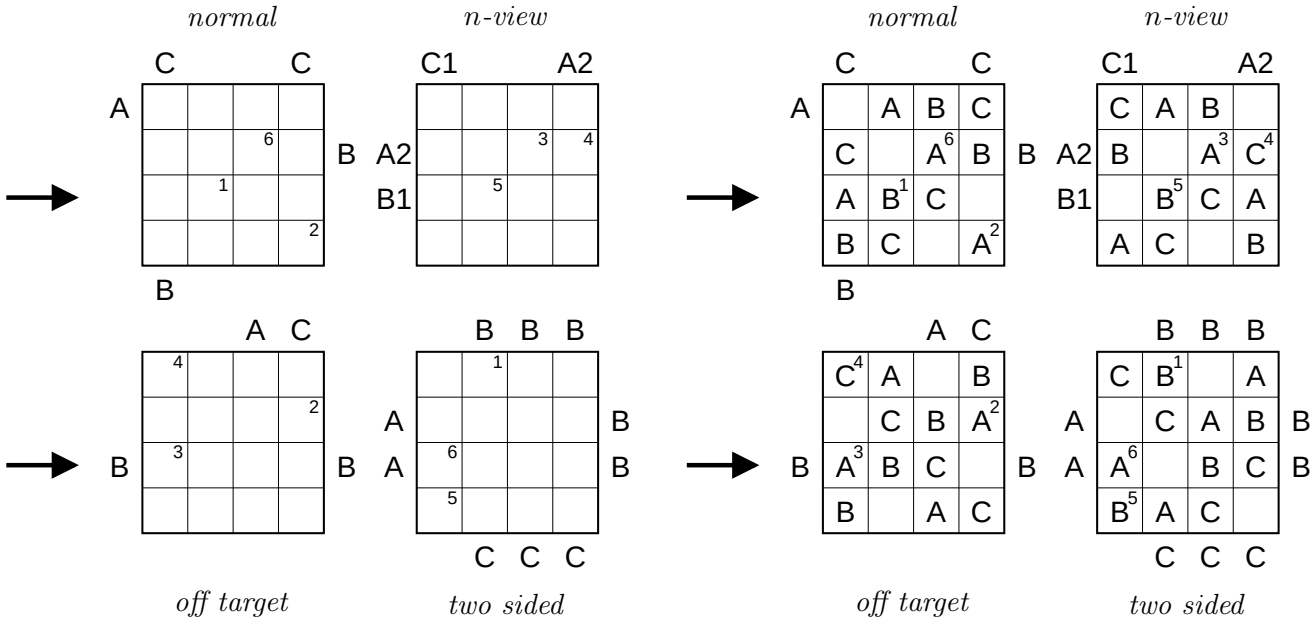
The second diagram (top right) is a n-view-as easy as: Next to the letters at the borders, there is a number. This number tells, if the letter is the first or the second in that row or column.

The third diagram (bottom left) is an as easy as off target, where all letter at the borders are off by one in the alphabet.

The fourth diagram (bottom right) is a two sided as easy as, where the letter at the left side of the grid is located somewhere to the left of the letter shown at the right side of the row. Similarly, the letters above the grid will be located somewhere higher than the letters shown at the bottom of the grid in the same column.

Note: For a correct solution, all four diagrams have to be solved. Partial solutions are not accepted.

Example:



Answer key: Enter the content of the two rows in both diagrams marked with arrows from left to right.

In the example the answer key would be: ABC–, –BCA, ABC–, A–BC

19. Islets 60 points

In your mind divide every cell horizontally and vertically. This results in four quadrants. Now blacken one of these quadrants. Quadrants that are connected vertically and horizontally are called islets. The islets may not touch, not even diagonally. The numbers inside the grid give the number of quadrants that touch that number. The numbers at the borders give the number of all quadrants that belong to islets that have at least one quadrant inside this row or column.

Example:



Answer key: Enter for every row the number of black quadrants that are in the upper half of the cell.

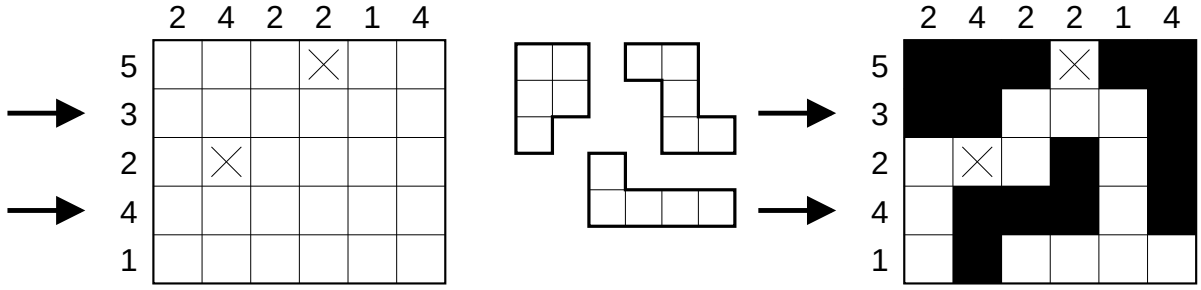
In the example the answer key would be: 2, 2, 1

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20. Pentomino 60 points

Place the 12 shown pentominoes in the diagram in a way that they do not touch, not even diagonally. The pentominoes may be rotated and mirrored. The numbers at the borders give the number of cells in that row or column that belong to a pentomino. Some empty cells are given as crosses.

Example (with 3 pentominoes):



Answer key: Enter the content of the two rows marked with arrows from left to right; use S for a black cell and W for a white cell.

In the example the answer key would be: SSWWWS, WSSSWS

The puzzles have been created by the following authors:

- Silke Berendes: ABC-box, four times as easy as..., hexagonal tapa, in-the-shadow-of-9-sudoku, masyu-fences, skyscrapers with mixed information, slalom with large cells, tents – off target
- Bernhard Seckinger: Arrows with numbers, double mine, fillomino, galaxies, incomplete kakuro, islands, islets, magnets, particle zoo, pentomino, subway
- Philipp Weiß: Urn puzzle

Thanks to Liane Robinson for correcting the english translations!