# WPC Practice
# Mini Marathon

22nd September – 29th September

http://logicmastersindia.com/2013/09P2/

http://logicmastersindia.com/t?tid=741

By

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# About the Mini Marathon

This is a differently designed LMI test, for preparation of WPC 2013.

- There are 4 different rounds in this test.
- There is no fixed time limit for any round.
- The test will be open for more than a week, with the idea that everyone can get around to solve all rounds conveniently.
- Each round can be started, solved and submitted independent of others, and in any order, anytime during the week.

## Scoring

Each round is worth 120 points. Additionally, bonus points will be awarded for submitting all puzzles correctly within <u>60 minutes</u>. Bonus structure will be announced in forum.

There will be multiple puzzles in each round. A puzzle value will be 80% of the original value, if submitted after 60 minutes.

Total score for a player will be computed by summing individual round scores.

## Instant Grading

Instant Grading is built-in in this test. As soon as you submit a puzzle, it will be marked as "correct" or "wrong". Please note that if a red warning is displayed while submitting, the submission can never be correct.

Following penalty rules will be applicable for wrong submissions

- 1.5 minutes will be added to your final submission time for each of the first two wrong submissions
- 3 minutes will be added to your final submission time for each of the subsequent wrong submissions

# Round 1 – Price tag

This round consists some Price tag puzzles. The puzzles are independent from each other.

## Rules of Price tag:

Paint some digit segments so that each placeholder becomes a digit, and that the resulting multiple digit numbers above the line add up to the number below the line. Numbers written on the digit segments above / to the left of the actual digits denote how many times that particular segment is used in the given row/column. No positive number starts with digit zero and the one digit is always on the right side of the holder.

*Answer key: Enter all 3 (or 4) numbers from top to bottom. For the example the answer key is 25,73,98.*

# Round 2 – Pentomino Samurai

This round consists 5 puzzles. There are 4 outer puzzles and a middle puzzle. Each outer puzzle is solvable alone.

The 5 puzzle form a Samurai puzzle. It means that to solve the middle puzzle it is necessary to find the correct positions of outer puzzles and to copy their 3x3 corners (2x2 in the example) into the middle grid.
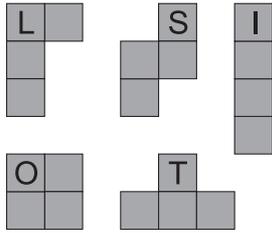
## Rules of Pentomino:

Place all given pentominos into the grid without repeating any shape. The pentominoes can be rotated and reflected, they cannot overlap the numbers and they can't touch each other, not even at the corners. The numbers in the grid indicate the number of cells occupied by pentominoes in the 8 neighbouring cells. The grey numbers has no special meaning, they are just marked in order to help the copy of corners. (The example consists only tetrominoes.)

**Rules of copy:** Copy the filled and empty squares into the coresponding position. Don't copy the clues, they are considered as empty cells.

*Answer key: Enter the length of 'painted' and 'unpainted' blocks in the marked rows from left to right. The clue cells are considered as 'unpainted'. For the example the answer key is 241, 232,241, 1132, 4111*
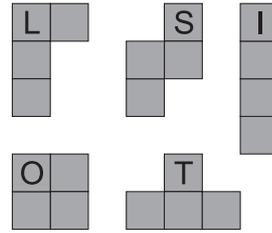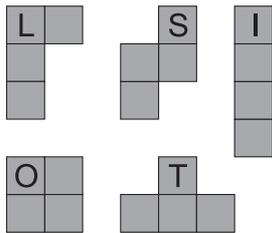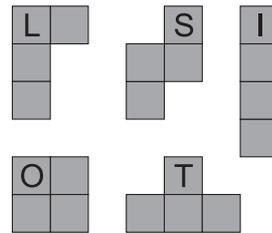
**A**

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

L  S  I
O  T

**B**

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

L  S  I
O  T

**C**

| | | | | | | |
|---|---|---|---|---|---|---|
| | 3 | | | | 2 | |
| | | 4 | | 3 | | |
| | | | 2 | | | |
| 3 | | | | 5 | 6 | |
| | | | | | | |
| | | 3 | | | | |

L  S  I
O  T

**D**

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

L  S  I
O  T

**E**

| | | | | 3 | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | 1 | | 3 | | | |
| | | | | | | |
| | | | | | 5 | |
| | | | | | | |
| | | 3 | | | | |

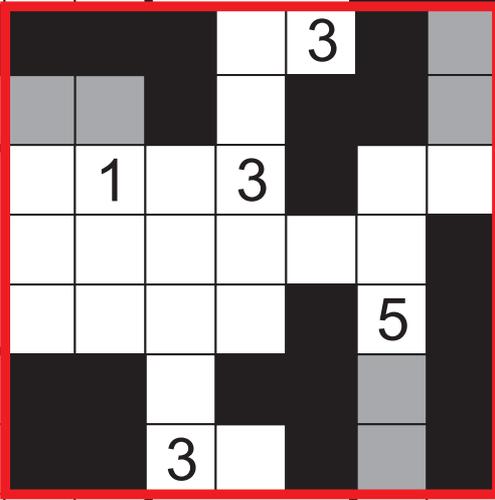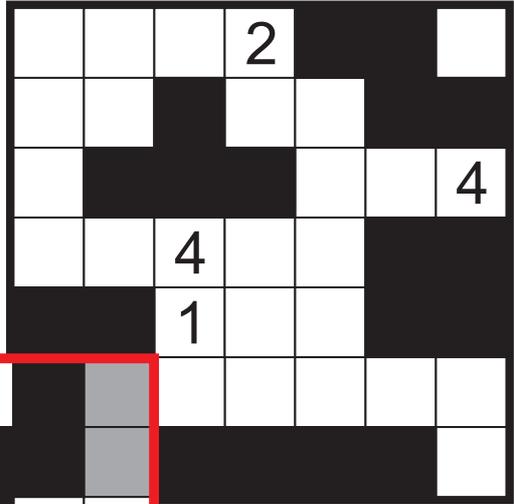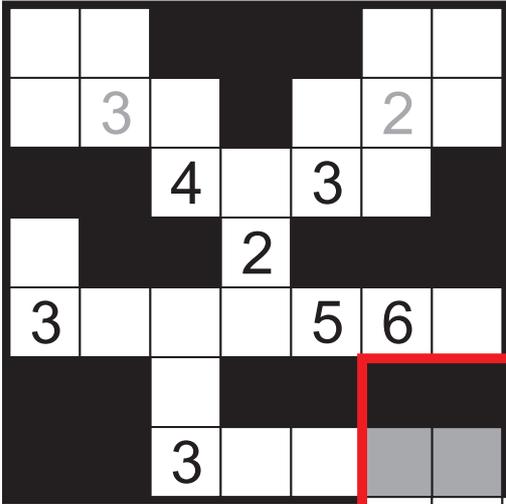L  S  I
O  T

# Round 3 – Great Wall

This round consists eight The Wall puzzles. The eight puzzles form a Great Wall together. Some puzzle has multiple solution, but the whole grid has only one solution.

## Rules of The Wall:

The grid is separated into two connected areas by a wall whose segments only use the boundaries of unit squares. A cell is „visible" from another cell if they are either in the same row or in the same column (irrespective of the wall).
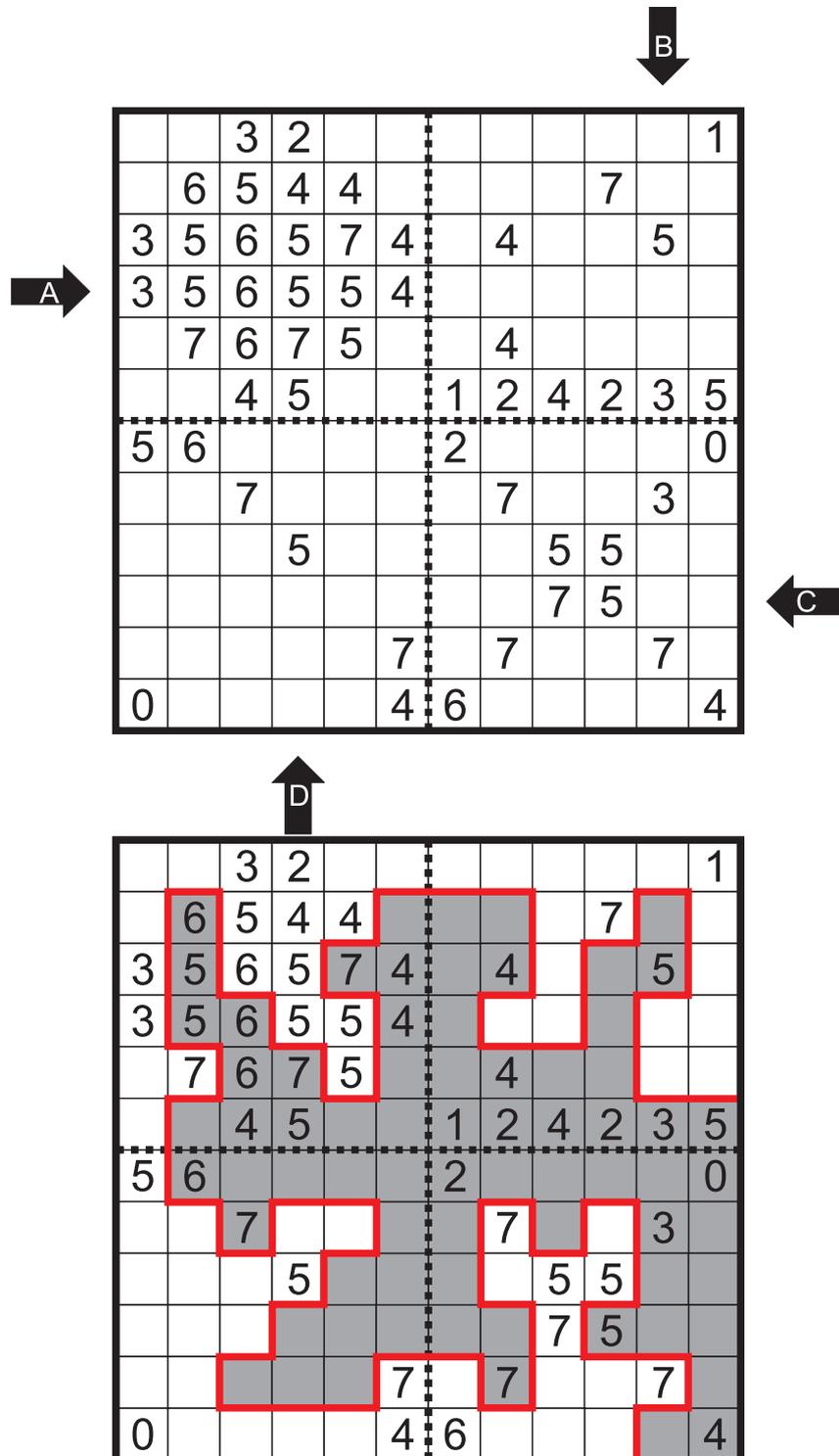
A number in a cell indicates how many cells on the opposite side of the wall are visible from there.

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

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

The Great Wall puzzle has 8 parts, each part is a The Wall puzzle. The parts are separated by dotted line. Each of them consists exactly one line (wall), and the the whole grid consists exactly one line which starts and ends on the edge of the grid, and never goes again on the edge or on dotted line.

Answer key: Enter the number of cells in each group separated by the wall segments, for the marked rows/columns from **left to right or top to bottom**. For the example the answer key is 1221, 1221, 213, 1221.

B ↓ (top), A → (left), C ← (right), D ↑ (between grids)

Puzzle grid:

|   |   | 3 | 2 |   |   |   |   |   |   |   | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
|   | 6 | 5 | 4 | 4 |   |   |   |   | 7 |   |   |
| 3 | 5 | 6 | 5 | 7 | 4 |   | 4 |   |   | 5 |   |
| 3 | 5 | 6 | 5 | 5 | 4 |   |   |   |   |   |   |
|   | 7 | 6 | 7 | 5 |   |   | 4 |   |   |   |   |
|   |   | 4 | 5 |   |   | 1 | 2 | 4 | 2 | 3 | 5 |
| 5 | 6 |   |   |   | 2 |   |   |   |   |   | 0 |
|   |   | 7 |   |   |   | 7 |   |   | 3 |   |   |
|   |   |   | 5 |   |   |   | 5 | 5 |   |   |   |
|   |   |   |   |   |   |   | 7 | 5 |   |   |   |
|   |   |   |   | 7 |   | 7 |   |   | 7 |   |   |
| 0 |   |   |   | 4 | 6 |   |   |   |   |   | 4 |

Solution grid:

|   |   | 3 | 2 |   |   |   |   |   |   |   | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
|   | 6 | 5 | 4 | 4 |   |   |   |   | 7 |   |   |
| 3 | 5 | 6 | 5 | 7 | 4 |   | 4 |   |   | 5 |   |
| 3 | 5 | 6 | 5 | 5 | 4 |   |   |   |   |   |   |
|   | 7 | 6 | 7 | 5 |   |   | 4 |   |   |   |   |
|   |   | 4 | 5 |   |   | 1 | 2 | 4 | 2 | 3 | 5 |
| 5 | 6 |   |   |   | 2 |   |   |   |   |   | 0 |
|   |   | 7 |   |   |   | 7 |   |   | 3 |   |   |
|   |   |   | 5 |   |   |   | 5 | 5 |   |   |   |
|   |   |   |   |   |   |   | 7 | 5 |   |   |   |
|   |   |   |   | 7 |   | 7 |   |   | 7 |   |   |
| 0 |   |   |   | 4 | 6 |   |   |   |   |   | 4 |

# Round 4 – Black and White Matrix

This round consists of twelve (12) puzzles that are connected in two ways. Firstly, all of them are to be coloured black and white in the process of solving.

Secondly, if two puzzle grids are placed adjacent to each other (sharing an edge), then the rows/columns along that shared edge must be identical in both puzzles. In other words, any two cells that are in different puzzles but share an edge must either both be black or both be white.

The layout of the actual round will be that all puzzles are sized 10 by 10 cells, and these twelve puzzles are arranged into a 4 by 3 matrix, yielding a 40 by 30 cells grid.

The rules of the individual puzzles are given below. The location of each of the puzzles within the 4x3 matrix is not specified here. However, in the actual round it will be clearly indicated which puzzle is which. Depending on the location of each of the puzzles, the external clues may be given on the top or the bottom, or left/right from the puzzle. In such cases, external clues only refer to the puzzle they are adjacent to.

## Puzzle 1 – Battleships
Locate the given fleet of ships in the grid so that ships do not touch each other, not even diagonally. Numbers outside the grid indicate the number of ship segment in that row/column. Some ship segments or sea cells without any ship segments may be given in the grid.
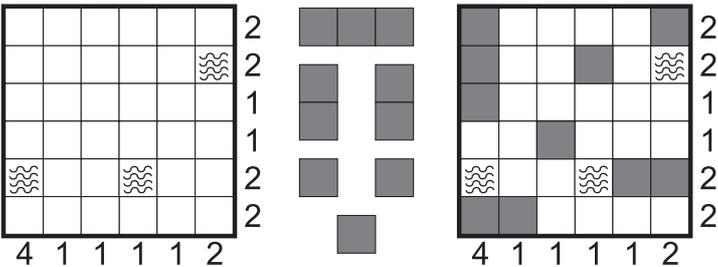
## Puzzle 2 – Bosnian Loop

Draw a single closed snake-like loop that is one cell wide and does not touch itself, not even diagonally. Numbers in the grid indicate how many cells around the number's cell (horizontally, vertically or diagonally) are visited by the loop.
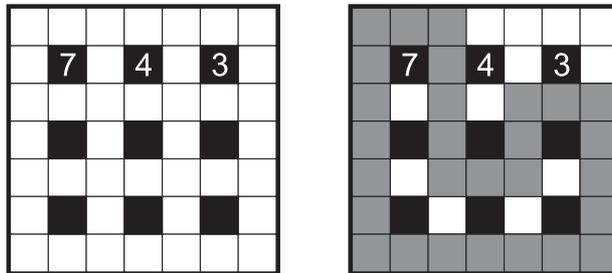
## Puzzle 3 – Corral

Paint a single connected set of cells (the corral) so that it does not touch itself, not even diagonally, does not surround any white areas and does not contain any 2x2 painted area. Numbers outside the grid indicate the sizes of consecutive painted blocks in that row/column. Numbers are given in increasing order and not in the order the blocks appear. There must be at least one white cell between any consecutive blocks.
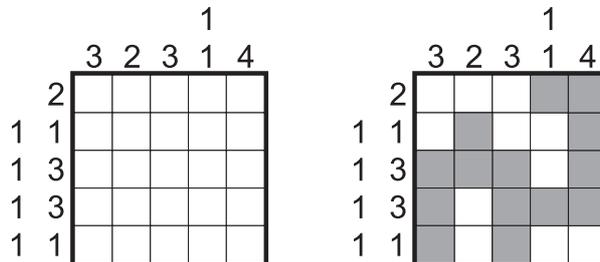
## Puzzle 4 – Crazy Pavement

Paint some cells in the grid so that for each region either all its cells are painted or none at all. Numbers outside the grid indicate the number of painted cells in that row/column.
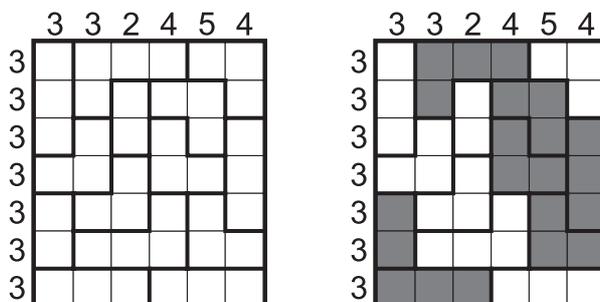
## Puzzle 5 – Paint it Black

Paint some cells black so that numbers outside the grid indicate the sizes of consecutive painted blocks in that row/column. Numbers are given in the order the blocks appear in that row/column, first number describes the closest block. There must be at least one white cell between any consecutive blocks.
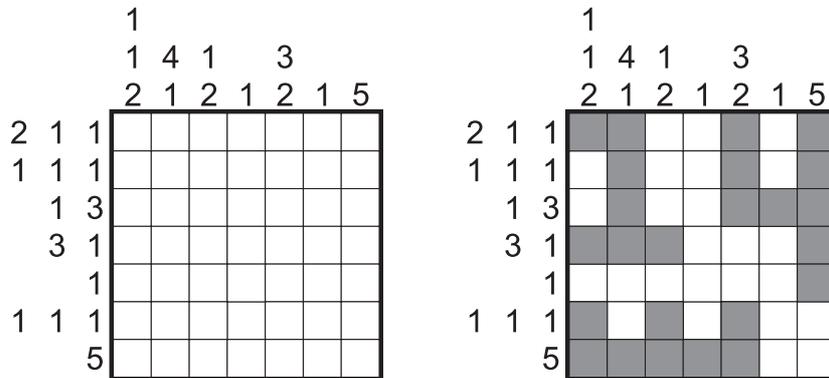
## Puzzle 6 – Lakes

Paint some cells black so that the grid is divided into white areas, each of them containing exactly one number, and that number equals to the size of the white area it is included in. As opposed to a Nurikabe puzzle, the black cells are allowed to have 2x2 area and they do not have to belong to a single connected group.
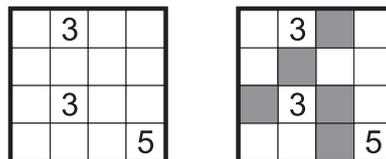
## Puzzle 7 – Windows

For each of the 2x2 areas (the windows), paint two of its cells black and the other two cells white. The black cells of the grid forms a Corral (see puzzle 3). Additionally, the white cells cannot contain a 2x2 area anywhere.
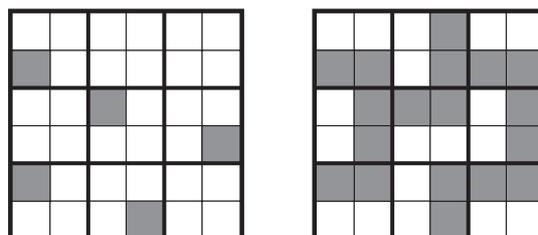
## Puzzle 8 – Pentomino Blokus
Place some of the given pentomino pieces into the grid so that no two of them shares an edge. They can touch diagonally, though: every node where two pentomino pieces share a corner are marked with a dot.
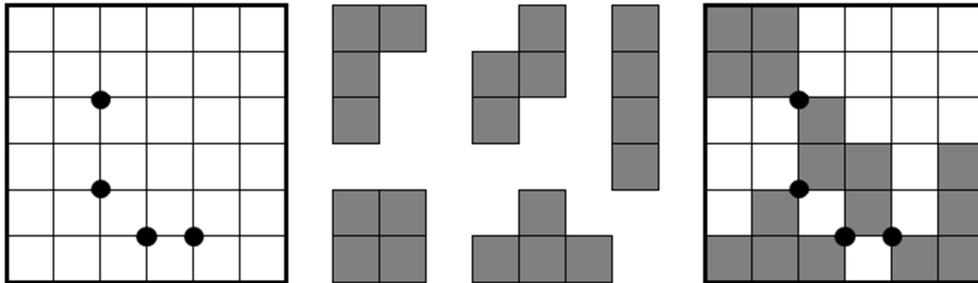
## Puzzle 9 – Pata
Standard Tapa rules except numbers denote white blocks instead of black ones.

Shade some empty cells black to create a single connected wall. Numbers in a cell indicate the length of consecutive white blocks in the neighbouring cells. If there is more than one number in a cell, then there must be at least one black (shaded) cell between the white cell groups. Cells with numbers cannot be shaded, and the shaded cells cannot form a 2×2 square anywhere in the grid.
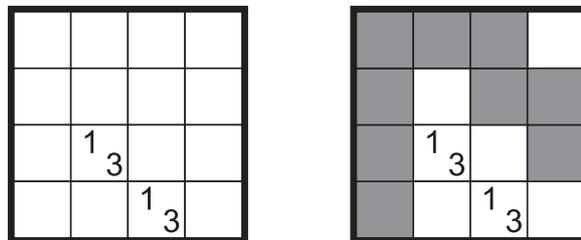
## Puzzle 10 – Fill-a-Pix
Paint some cells black so that each given number equals to the number of painted cells around it out of the horizontally, vertically or diagonally adjacent cells and the cell with the number itself, up to a total of 9 cells (up to 4 and 6 in corners and edges, respectively).
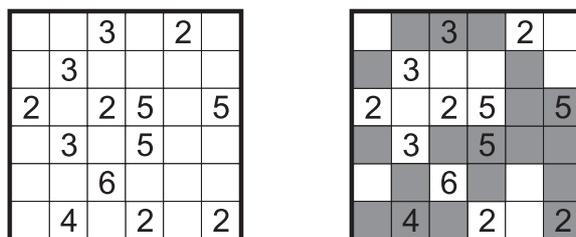
## Puzzle 11 – Line-a-Pix

Connect pairs of identical numbers with a line whose length equals to the numbers the line connects. The cells with the numbers have to be at the ends of the line and are included in the length. Lines cannot cross or overlap themselves or each other. Cells with a line count as black, cells without a line count as white.

## Puzzle 12 – Heyawake

Paint some of the grid cells so that no two painted cells share an edge and all unpainted cells are connected. Numbers in regions indicate the number of painted cells in the region they are in. A string of horizontally or vertically consecutive unpainted cells can never visit three regions.

*Answer key: Enter the lengths of groups of shaded and unshaded cells in the marked rows/columns from **left to right or top to bottom**. For example, the key for row 2 of Heyawake above is 213 and the key for column 4 is 141.*