Instruction booklet

Puzzles by **Ivan Laptiev**and **AndreyBogdanov**

24 - 27 February 2017
100 minutes

Snowman is a typical Russian winter toy - an anthropomorphic snow sculpture built from snowballs. In this contest all snowmen satisfy to very restrictive properties.

1.	Fillomino	20 + 35 points
2.	Tapa	15 + 15 points
3.	Light Garlands	15 + 50 points
4.	Hidoku	40 + 50 points
5.	Hitori	30 + 30 points
6.	Skyscrapers	45 + 65 points
7.	Sudoku	40 + 80 points
8.	SamuraiSudoku	70 points

Instant Grading will be enabled in this contest.

Specialthanksto:
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LMI and **Deb Mohanty** for hosting the contest

General rules

Each snowman is a figure from few ovals placed vertically. **Masses of the ovals decrease geometrically going from bottom to top. Every oval has a mass which is F times bigger than the mass of the next oval. F (fattiness) is a constant for every snowman. F not necessary to be integer, but must be strictly greater than 1.**
In different puzzles mass of an oval has a slightly different meaning. Mostly this is a sum of all digits inside the oval. Thespecialcases:

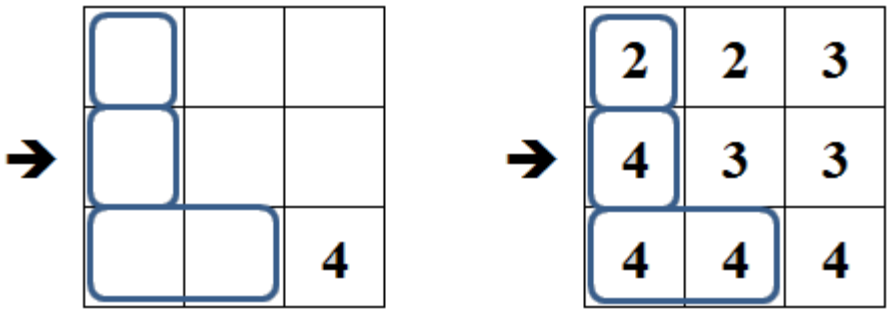
- For “Tapa” puzzle mass is a number of blackened cells inside the oval
- For “Light garlands” puzzle muss is a sum of digits on the oval border
- For “Hitori” puzzle muss is a sum of non-blackened digits inside the oval

Colors of snowmen doesn’t make sense for solving purposes and given only for better distinguishing.

1. Fillomino

Divide the diagram into areas and write a number into every cell. All numbers within an area must be the same, and they must indicate the size of the area. Areas that have the same size may not share an edge, but they may touch at a corner.
Numbers that are given at the start may belong to the same area, and there may also be areas that are bigger than any given number.
Mass of a snowman’s oval is a sum of all numbers inside the oval.
Answer Key: content of the marked rows/columns. Use the last digits for two-digit numbers.
For the given example the answer would be: **433**

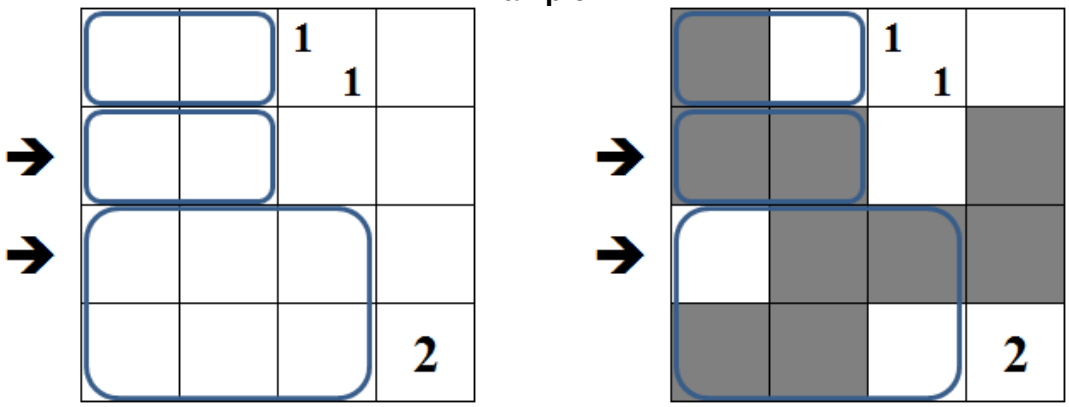
Example:



2. Tapa

Blacken some cells in the grid so that all black cells are connected horizontally or vertically and no 2x2 group of cells is completely blackened. Cells having clues cannot be blackened.
The clues in the cells indicate the lengths of the sequences of black squares surrounding that cell. If there is more than one number, the sequences must be separated by at least one empty cell. The order of the clues does not necessarily represent the order of the sequences.
Mass of a snowman's oval is a number of blackened cells inside the oval.
Answer Key:enter the length of continuous areas of shaded and non-shaded cells in the marked rows/columns. For the given example the answer would be: **211, 13**

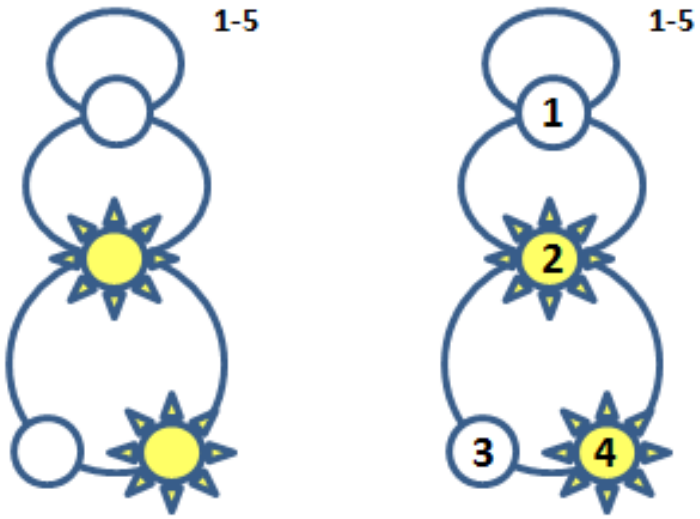
Example:



3. LightGarlands

Place numbers from the giveninterval to the circles (bulbs of the garland)using every number at most once. All luminousbulbs (marked with stars) have numbers of the same parity. Other bulbs can be both even and odd.
Mass of a snowman's oval is a sum of all numbers at the oval's border.
Answer Key:content of all bulbs row by row from top to bottom.Use the last digits for two-digit numbers.For the given example the answer would be: **1234**

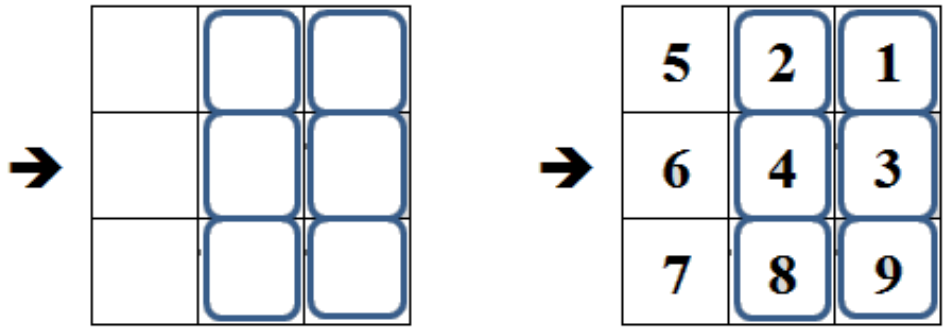
Example:



4. Hidoku

Insert a number from 1 to N (=number of cells of the diagram) into each cell of the diagram and use each number exactly once. Consecutive numbers must be orthogonally or diagonally adjacent.
Mass of a snowman's oval is a sum of all numbers inside the oval.
Answer Key: content of the marked rows/columns.Use last digits for two-digit numbers.
For the given example the answer would be: **643**

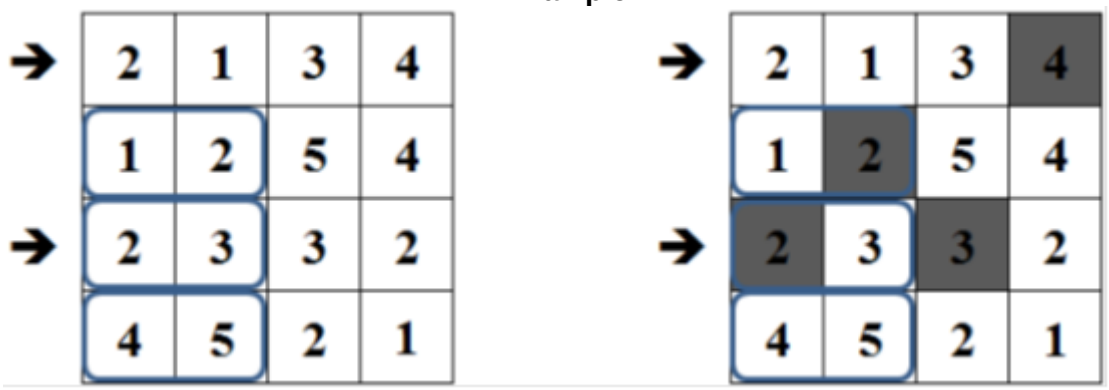
Example:



5. Hitori

Blacken some cells in the grid so that in the remaining cells no number occurs more than once per row or column. All non-blackened cells must be connected (i.e. the blackened cells may not divide the puzzle into two or more parts). Two blackened cells may not be adjacent, though may touch by a corner.
Mass of a snowman's oval is a sum of numbers in all non blackened cells inside the oval.
Answer Key:enter the length of continuous areas of shaded and unshaded cells in the marked rows/columns.
For the given example the answer would be: **31, 1111**

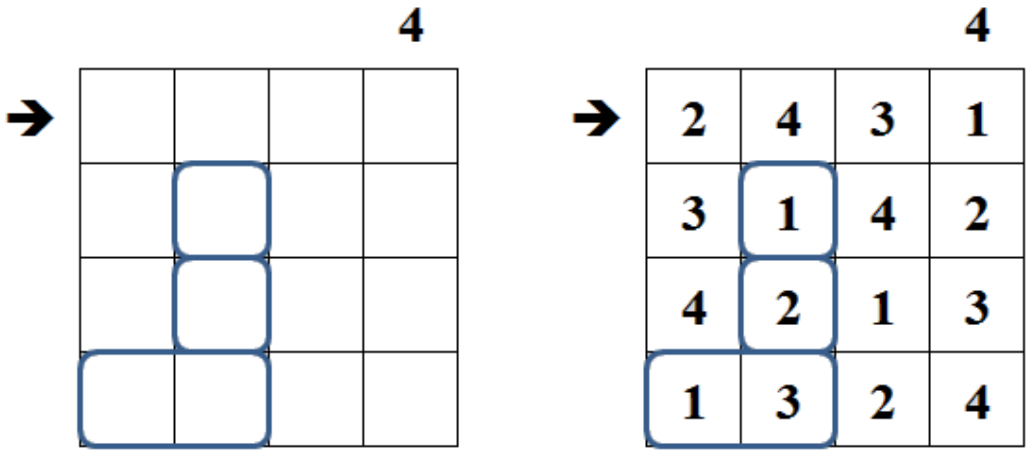
Example:



6. Skyscrapers

Insert a digit from 1 to N(=the grid size) into every cell, so that each digit appears once in each row and column. Each digit in a cell represents the height of a building.
Numbers outside the grid indicate how many buildings a distant observer could see (at least part of) in that row or column.
Mass of a snowman's oval is a sum of all numbers inside the oval.
Answer Key: content of the marked rows/columns.
For the given example the answer would be: **2431**

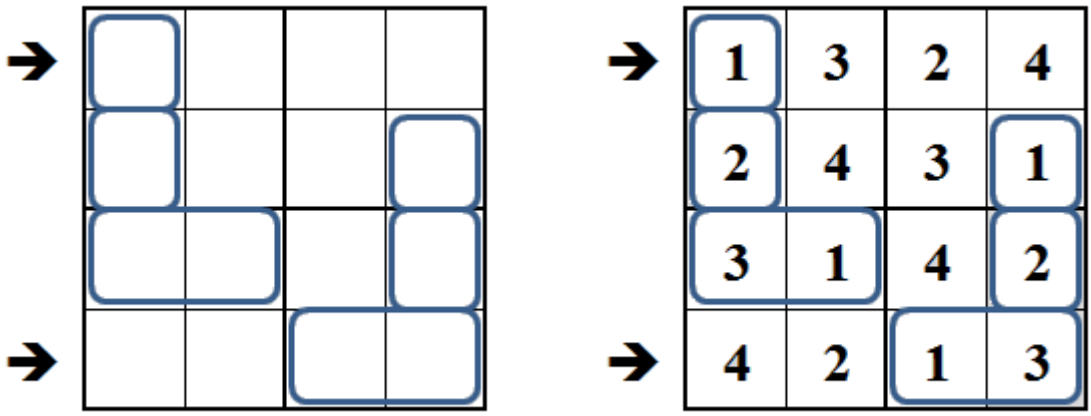
Example:



7. Sudoku

Insert a digit from 1 to N(=the grid size) into each cell so that in every row, every column and every outlined area, each number appears exactly once.
Mass of a snowman's oval is a sum of all numbers inside the oval.
Answer Key: content of the marked rows/columns.
For the given example the answer would be: **1324, 4213**

Example:



8. SamuraiSudoku

Puzzle consists of two overlapping sudoku grids. For each grid standard sudoku rules apply.
Mass of a snowman's oval is a sum of all numbers inside the oval.
Answer Key: content of the marked rows/columns.
For the given example the answer would be: **2134, 124321**

Example: