# Magic Cube – Instruction booklet
LMI Monthly Puzzle Test – 30/31 July 2011
Duration: 120 minutes

These puzzles were made by the puzzle-makers of the 20th WPC.
This is a set of 11 types by 7 authors.

All puzzles are cube-shaped which means that the cells are parallelograms instead of squares. All puzzles are built up by three different types as you can see below (and as in the samples).
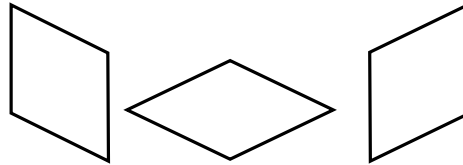
There are 3 puzzles of each type. First two are on a standard cubes (as for example the sample puzzle of the Magic Snail), the third one is on a special cube (see Sudoku example puzzle).

The rows are defined as cells following each other at the opposite side of each parallelograms. So there are three direction of rows: from left to right, from top left to bottom right and from top right to bottom left. Next to some puzzles (where it has an importance) you can see arrows showing the from-to directions. On the normal cubes the rows „break" once, on the special ones they can „break" more than once (as in the Sudoku sample puzzle).
It is also worth to note that in some puzzles all the rows are 8 cells-longs but in others there can be shorter rows as well.

The rules are basically similar that of the classic versions of the puzzle types.

Please note: the puzzle booklet does not contain the sample puzzles and there is no introductory first page. Finally: the samples in this booklet are normal and not too easy puzzles for training. That's why the solutions are placed at the end of the booklet and not next to the sample puzzles in order to let you to practice.

The puzzles:

#	Type	Author	Easy	Medium	Special
1	**Magic Snail**	*Zoltán Gyimesi*	10	40	40
2	**Hitori**	*Pál Madarassy*	15	40	45
3	**Cave**	*Zoltán Németh*	15	50	50
4	**Dutch loop**	*Gyula Slenker*	15	35	40
5	**Sudoku**	*Gyula Slenker*	20	35	40
6	**Capsules**	*Pál Madarassy*	25	25	50
7	**Heyawake**	*László Osvalt*	15	55	55
8	**Fillomino**	*Károly Kresz*	15	20	15
9	**Slalom**	*Zoltán Horváth*	25	30	65
10	**Star battle**	*Zoltán Horváth*	20	55	55
11	**Crosswords**	*László Osvalt*	20	30	35

Sum: 1100 points

1 – Magic snail

Enter a digit from 1 to 4 into white cells so in every row every digit will appear exactly once. Digits must repeat in order 1-2-3-4...1-2-3-4... along the labyrinth.

Answer: Enter digits in the marked rows, and enter "-" for empty squares. The answer for the example would be: 1--43-2-, 2-4---13
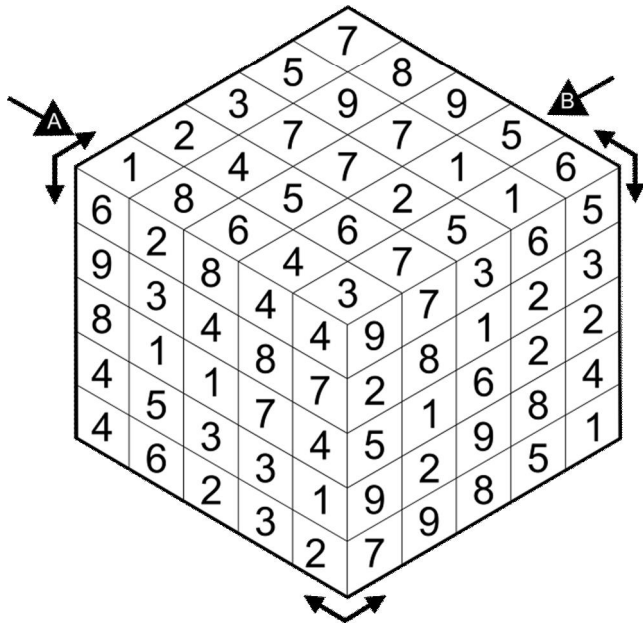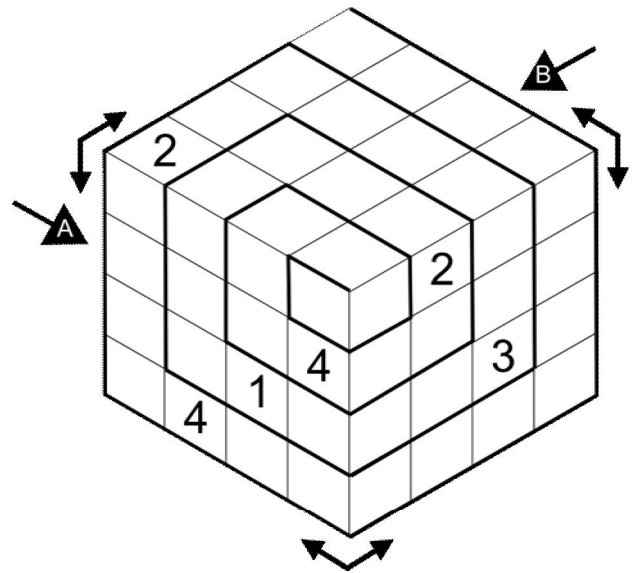
2 – Hitori

Paint out some cells so that there are no duplicate numbers in any row. Painted cells cannot share an edge and all the unpainted cells must be connected.

Answer: Write the lengths of separate unpainted cell blocks in the marked rows. The answer for the example would be: 3211, 3111

3 – Cave

Select a connected set of cells – 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 have an island inside it. Visible cell is a cell which is in the same row in any direction and there is no empty cell between the cell and the cell with the number.

*Answer: Write the lengths of separate **selected cell blocks** in the marked rows. The answer for the example would be: 213, 15*

NOTE: Please count the number of the cells which form the cave (the selected cell blocks)!
Corrected on 26th July
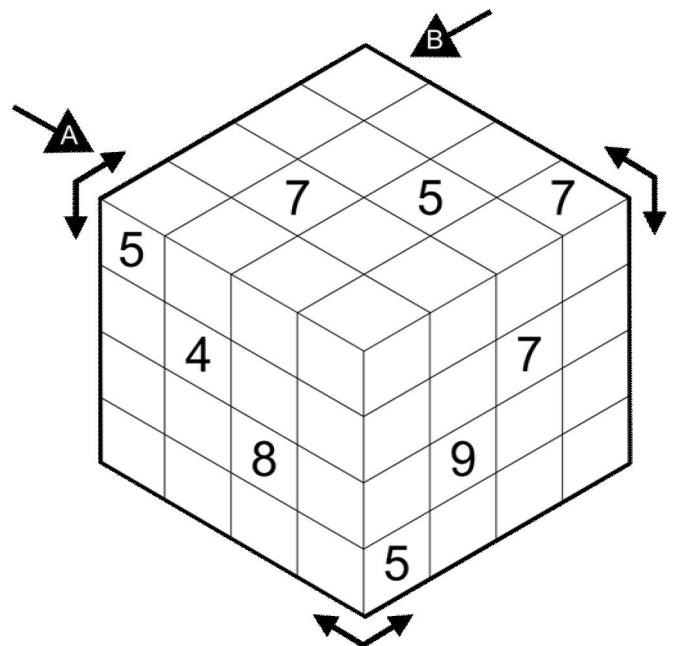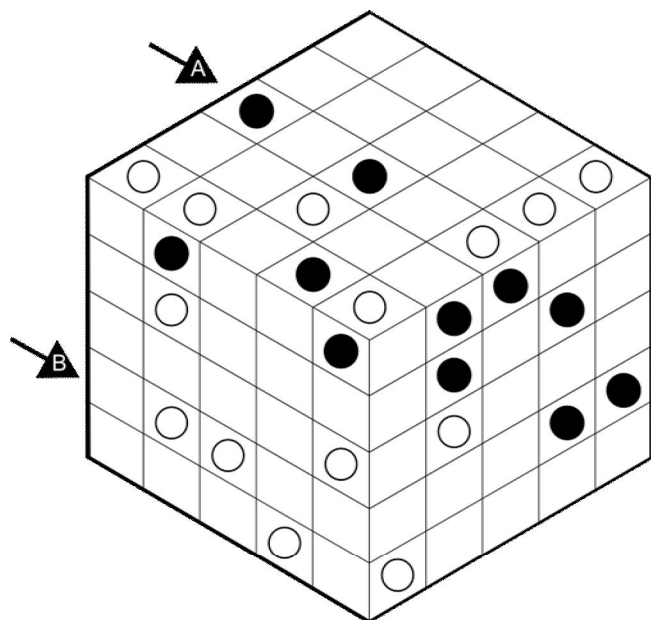
4 – Dutch loop

Draw a single closed loop into the grid. The segments of the loop can connect only the centres of the cells which touch each other by a side. The loop passes all cells, and does not cross nor touch itself.
The loop makes turn on each black circle and goes straight through each white circle.

Answer: *Enter the lengths of horizontal line segments in the marked rows. The answer for the example would be:* 131, 331

5 – Sudoku

Fill in the cube so that every outlined region and every row contains the digits 1 through 8.

Answer: *Enter digits in the marked rows. The answer for the example would be:* 68723145, 58734126
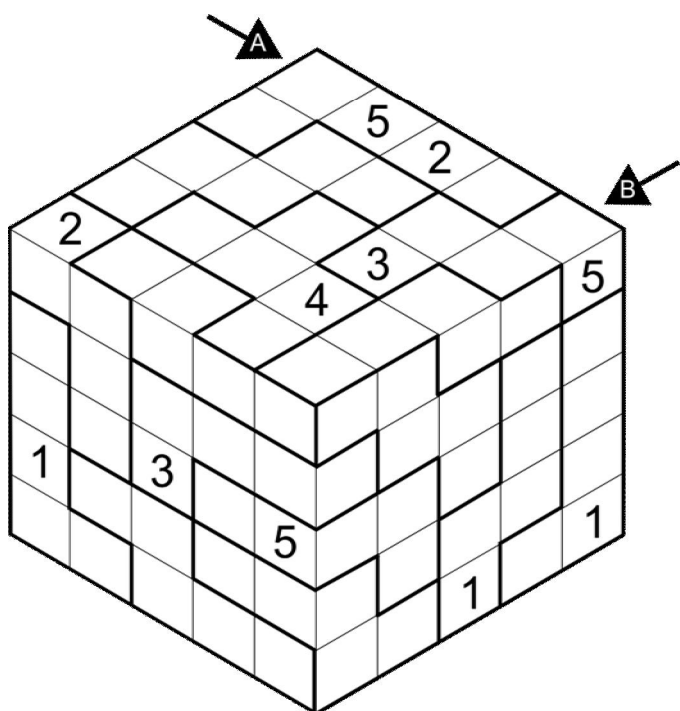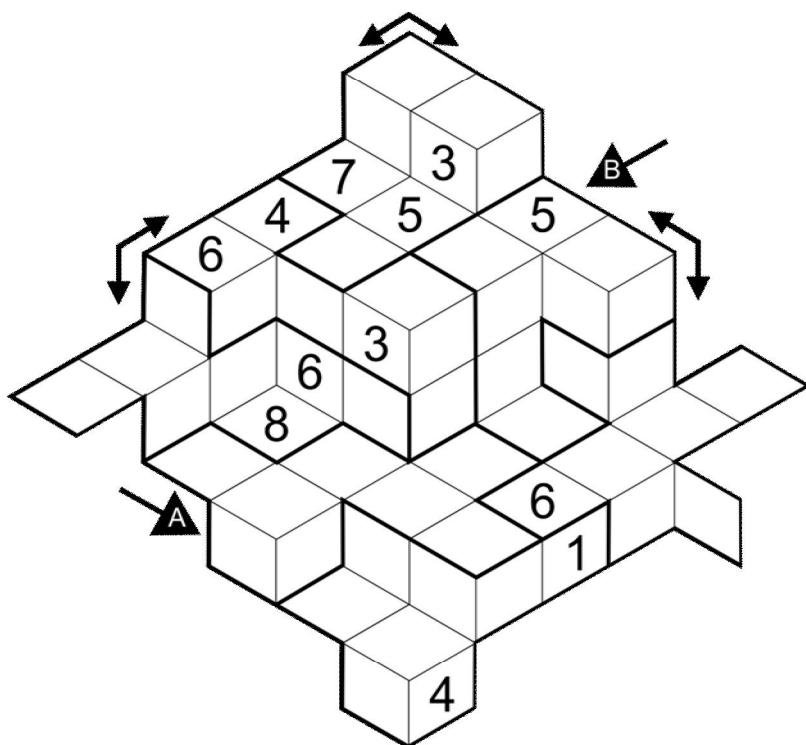
6 – Capsules

Put numbers from 1 to 5 into the empty cells so that no two neighbouring cells (sharing edge or corner) contain identical numbers. Each pentomino contains one of each number from 1 to 5.

Answer: *Enter digits in the marked rows. The answer for the example would be: 4523153521, 1215254543*

7 – Heyawake

Blacken some cells so that all remaining white cells must be interconnected. Black
cell cannot touch each other by their sides, but they can diagonally. Sequences of white cells in a row must not belong to more than two different sectors.
Numbers in some sectors indicate how many black cells the sector itself contains.

Answer: Write the lengths of separate unpainted cell blocks in the marked rows. The answer for the example would be: 312, 231
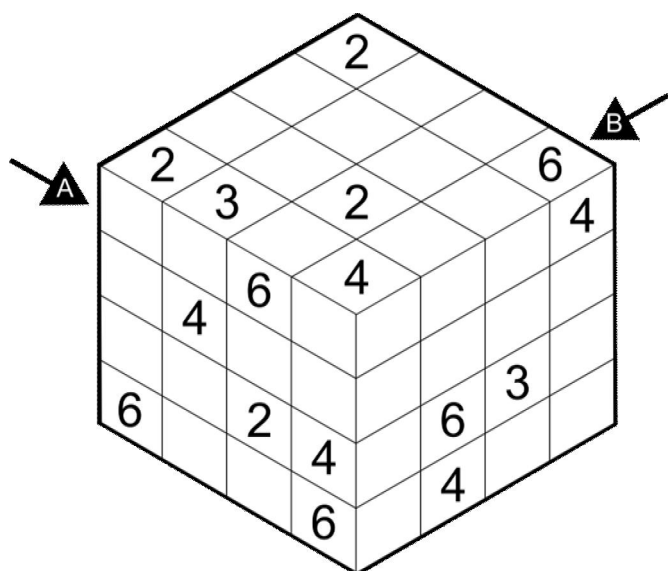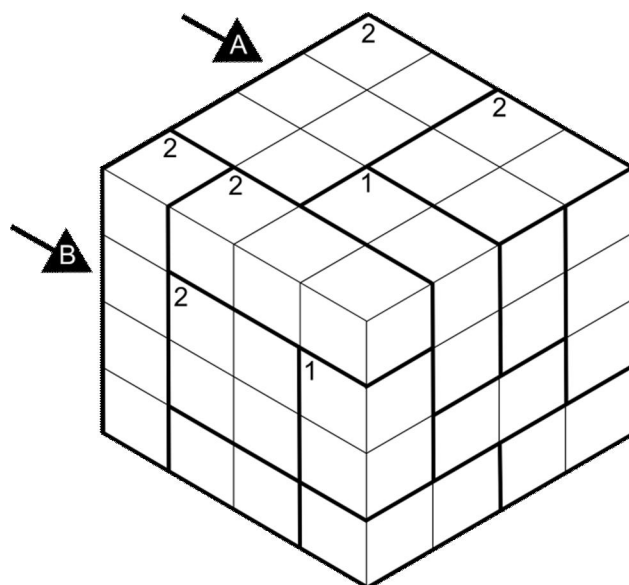
8 – Fillomino

Divide the grid cells into polyominoes that satisfy the following rules.
1. Every number in the grid must be contained in a polyomino containing that quantity of cells.
2. No two polyominoes containing the same quantity of cells may share an edge.
3. A polyomino may contain one, more than one, or none of the numbers originally given.

Answer: Enter digits in the marked rows. The answer for the example would be: 66646444, 66244446

9 – Slalom

For each cell draw exactly one of the two diagonals.
No closed separate internal area may be created by the diagonals. Digits in the intersections indicate how many diagonals start from that point.

Answer: Write the number of diagonals starting from the letter-marked intersections. The answer for the example would be: 242321
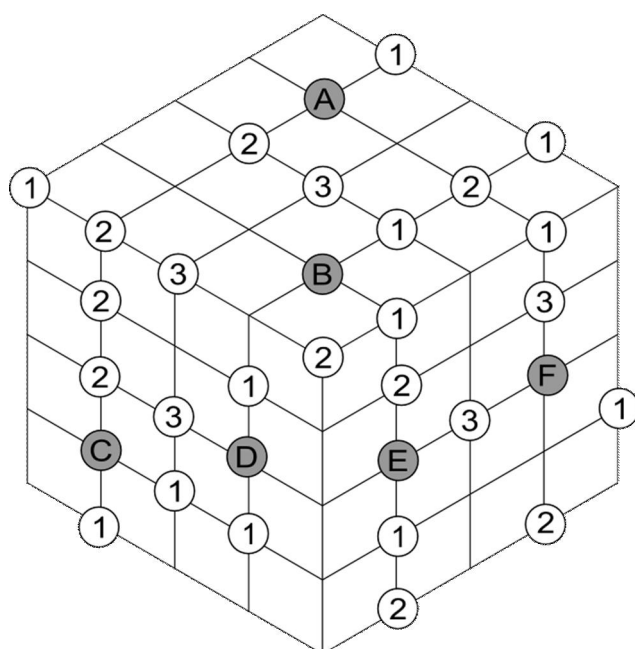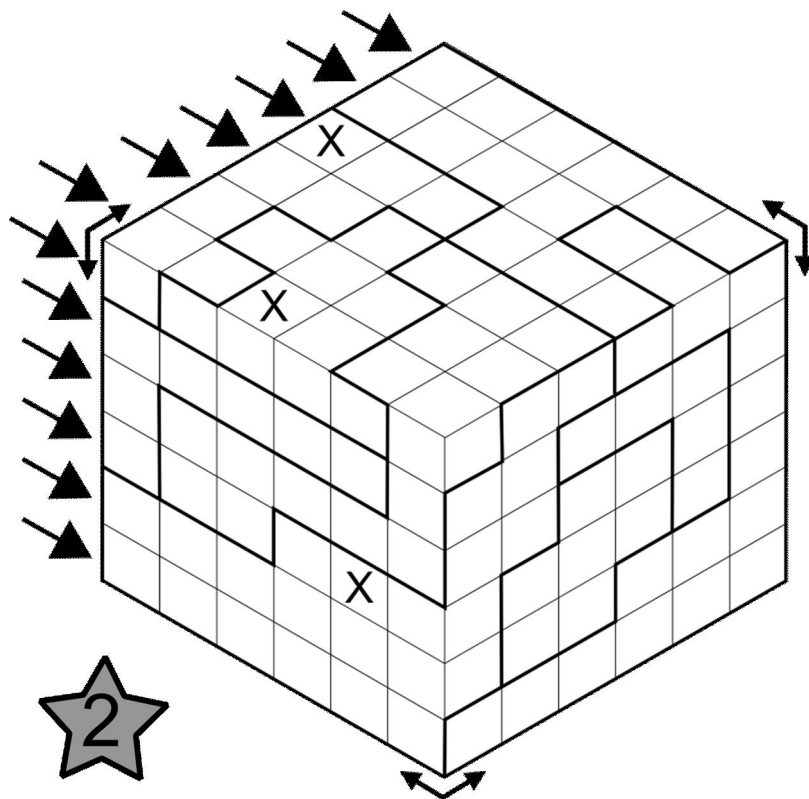
10 – Star battle

Place an equal number of stars (indicated by the number next to the puzzle) on every row, in every column and in all larger areas such that two cells containing stars never touch, not even at a point. The X-marked squares cannot contain star.

Answer: *Write the position of first star in the marked 8 (12) rows. Use 0 instead of 10. The answer for the example would be: 583924131427*

11 – Crosswords

Place the listed words into the puzzle grid! The words can be read in three directions, and these directions are shown by the arrows. You have to find the black cells too. Some letters are given.

Answer: *Enter letters in the marked rows and enter "-" for black squares. The answer for the example would be: TELEDATA, A-REPORT*

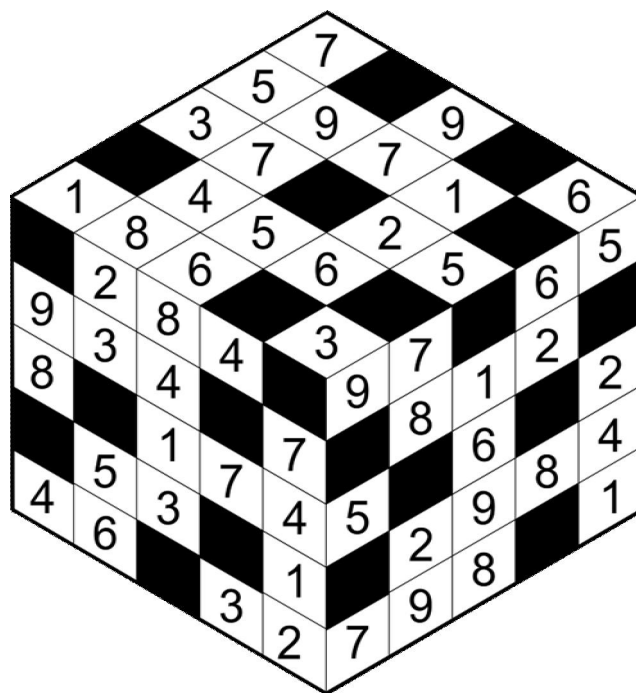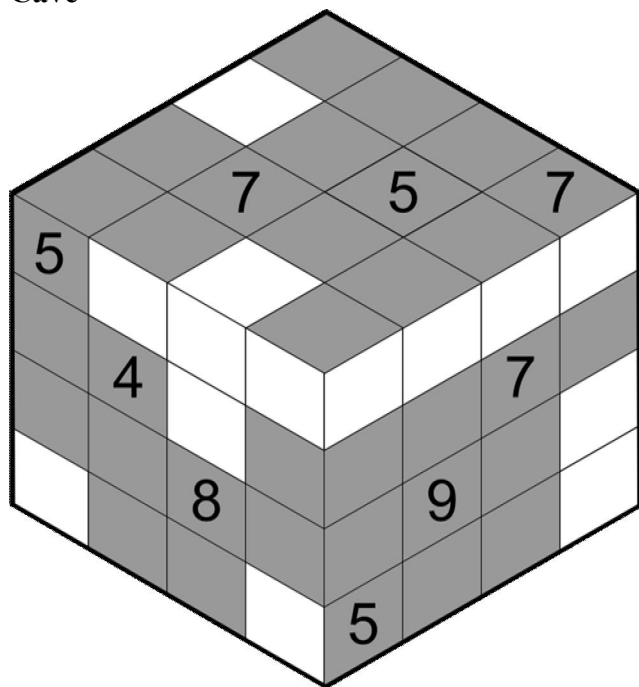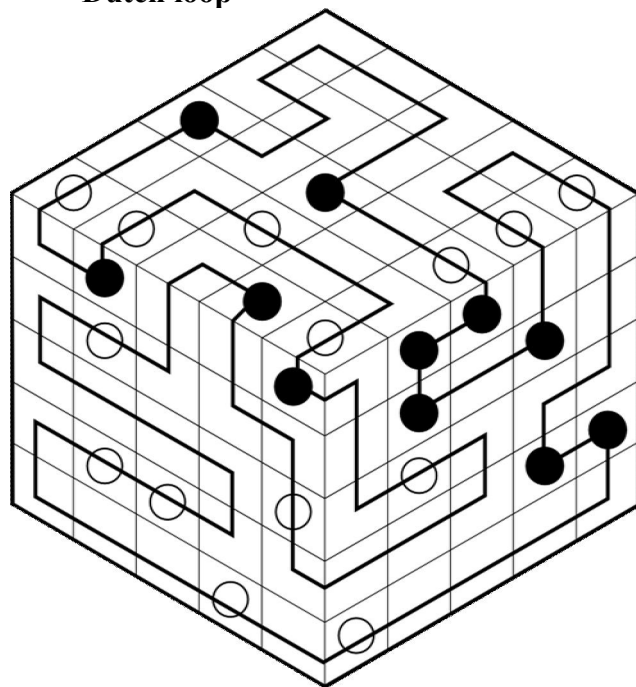|		
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ETECT	OPEN DATE	VICTORIA
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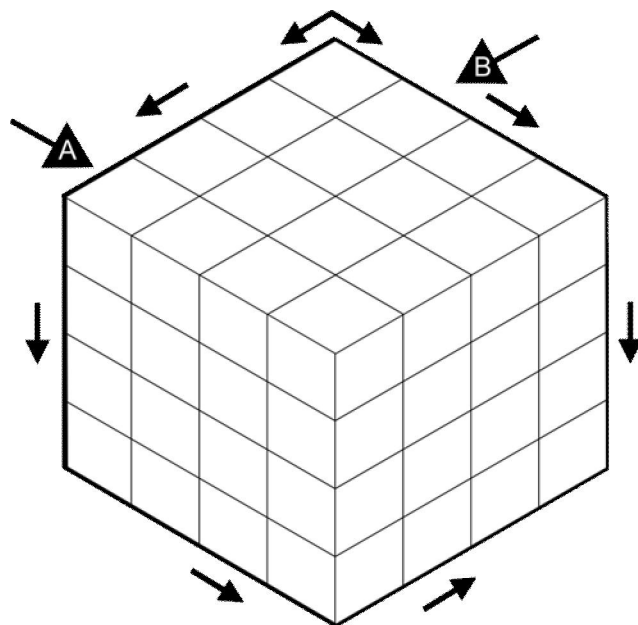
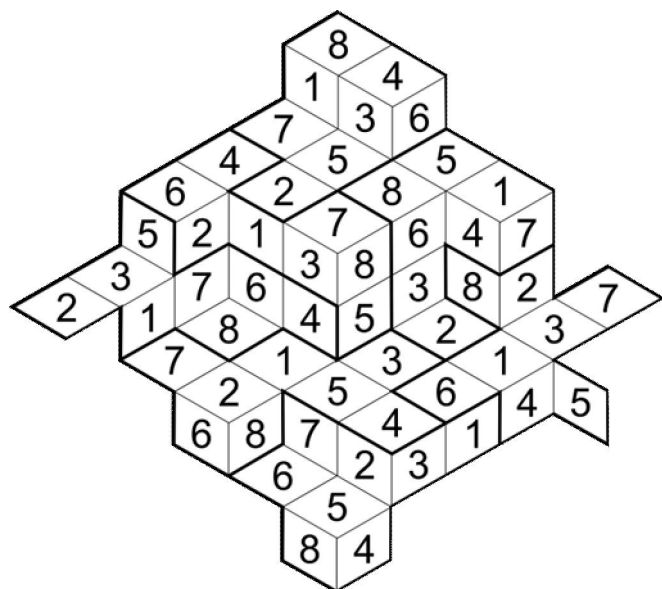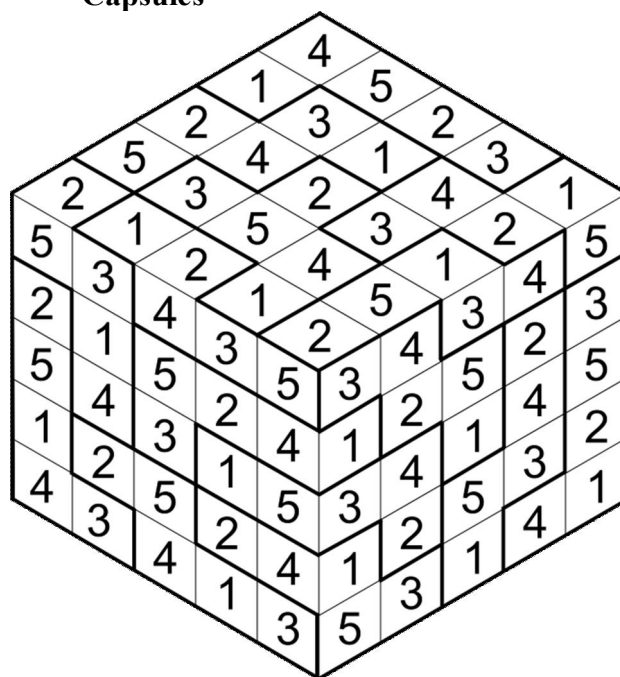# Solution of the example puzzles:

Magic Snail
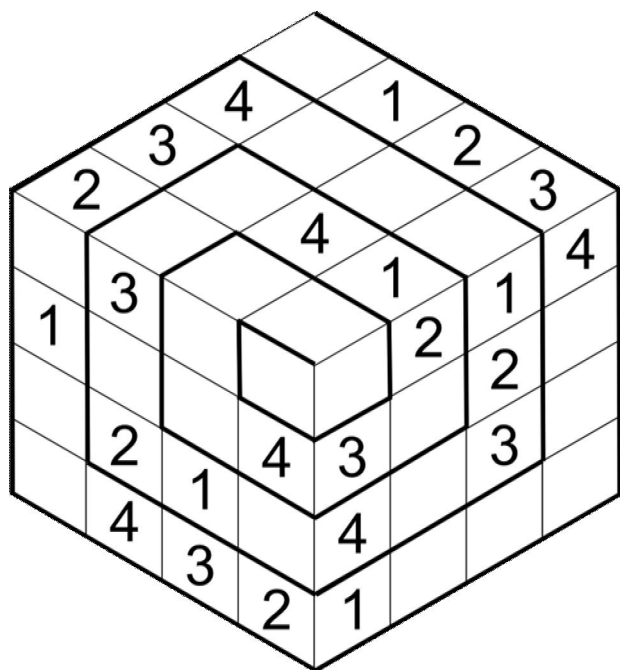
Hitori

Cave

Dutch loop

Sudoku

Capsules

Heyawake
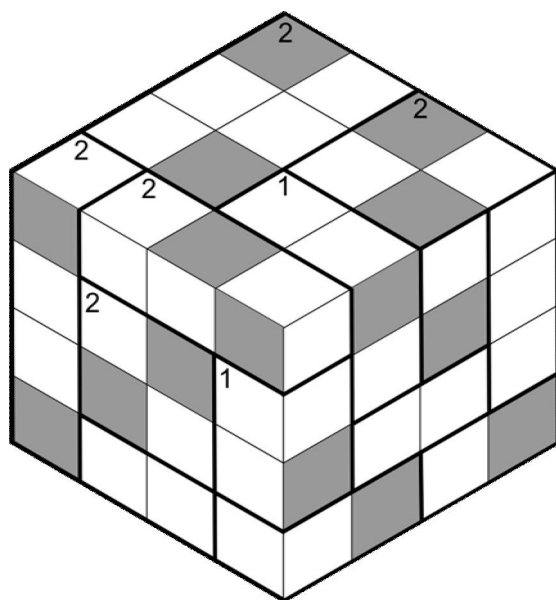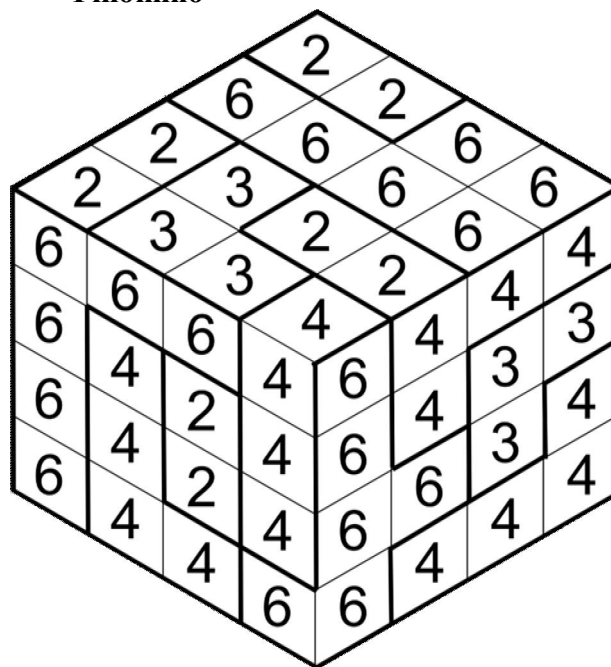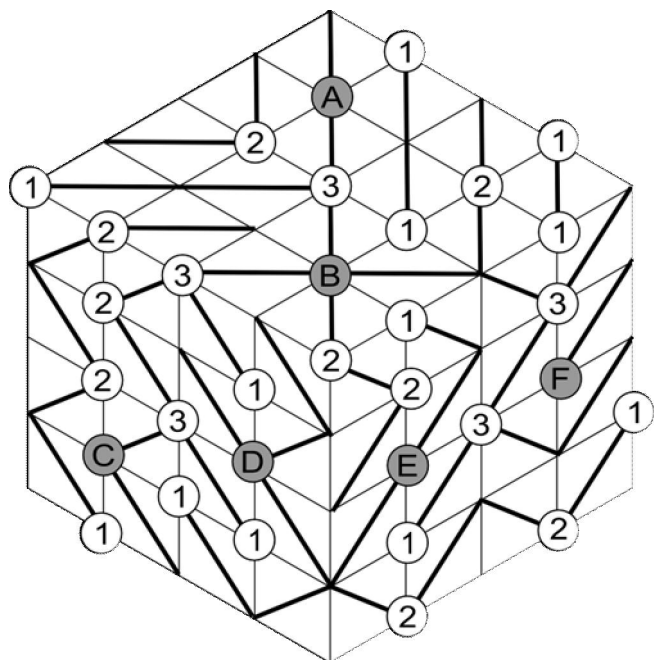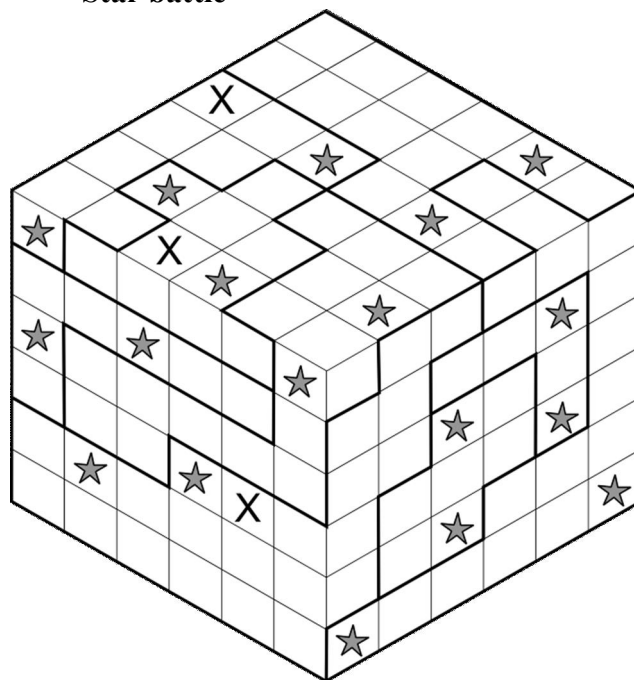
Fillomino

Slalom

Star battle

Crosswords