WPF SUDOKU/PUZZLE GRAND PRIX 2016

ROUND 4

# WPF PUZZLE GP 2016 INSTRUCTION BOOKLET


## Puzzle Authors: Hungary

### Zoltán Horváth, Zoltán Németh, Pál Madarassy, Anikó Kozics


**Special Notes**: The point values are final in this version of the booklets.

**Points, Casual Section:**

| | | |
|---|---|---|
| **1.** | **Mastermind** | 4 |
| **2.** | **Mastermind** | 13 |
| **3.** | **Mastermind** | 32 |
| **4.** | **Find the Triplets** | 5 |
| **5.** | **Find the Triplets** | 6 |
| **6.** | **Snake Cities** | 6 |
| **7.** | **Snake Cities** | 4 |
| **8.** | **Snake Cities** | 11 |
| **9.** | **Connections** | 3 |
| **10.** | **Connections** | 9 |
| **11.** | **Police** | 10 |
| **12.** | **Police** | 11 |
| **13.** | **Association Football** | 9 |
| **14.** | **Association Football** | 3 |
| **15.** | **Chess** | 25 |
| **16.** | **Chess** | 24 |
| **17.** | **Lights and Switches** | 8 |
| **18.** | **Lights and Switches** | 13 |
| **19.** | **Lights and Switches** | 10 |
| **20.** | **Lights and Switches** | 53 |
| **TOTAL**: | | 242 |

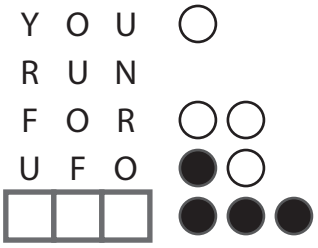
**Points, Competitve Section:**

| | | |
|---|---|---|
| **21.** | **Star Battle** | 14 |
| **22.** | **Star Battle** | 29 |
| **23.** | **Star Battle** | 78 |
| **24.** | **Masyu** | 19 |
| **25.** | **Masyu** | 10 |
| **26.** | **Masyu** | 8 |
| **27.** | **Domino Construction** | 9 |
| **28.** | **Domino Construction** | 23 |
| **29.** | **Domino Construction** | 25 |
| **30.** | **Cave** | 27 |
| **31.** | **Cave** | 35 |
| **32.** | **Cave** | 29 |
| **33.** | **Dotted Snake** | 14 |
| **34.** | **Dotted Snake** | 35 |
| **35.** | **Dotted Snake** | 21 |
| **36.** | **Spiral Galaxies** | 11 |
| **37.** | **Spiral Galaxies** | 52 |
| **38.** | **Spiral Galaxies** | 35 |
| **39.** | **Tetromino Search** | 12 |
| **40.** | **Tetromino Search** | 32 |
| **41.** | **Tetromino Search** | 52 |
| **TOTAL**: | | 570 |

# Casual Section (242 total points)

### 1-3. Mastermind [Anikó Kozics] (4, 13, 32 points)

Each row represents a guess at a secret code. A black dot represents a symbol in the guess that is in the same position as a symbol in the secret code. A white dot represents a symbol in the guess that is in the secret code, but not in the same position. The dots are given in no specific order, and each symbol in the secret code contributes at most one dot with black dots given priority over white dots in case of ambiguity (for example, if the guess was FREED and the codeword was GEESE, the puzzle would display 1 black and 1 white). Each symbol in the secret code appears in at least one guess. Blank spaces can appear in the guesses but will never appear in the secret code.




*The last line with empty space for the secret code, and any notes on the side, are given for aesthetic reasons only. The secret code may or may not be a word.*

**Answer**: Enter the secret code.

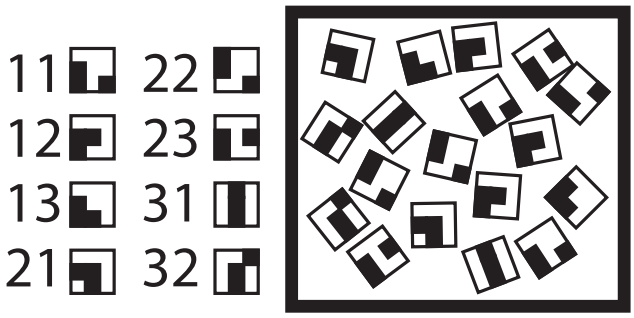
**Example Answer**: `OFF`

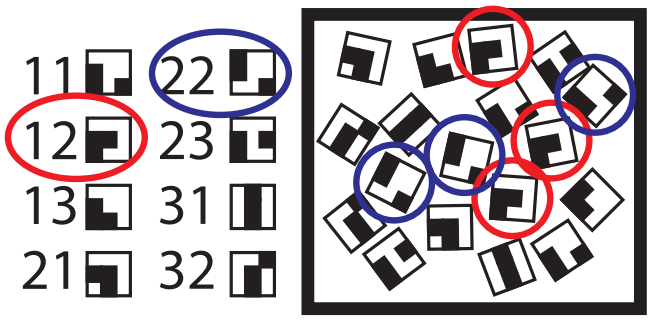
### 4-5. Find the Triplets [Pál Madarassy] (5, 6 points)

Two symbols appear three times in the box; the other symbols appear two times. Which two symbols appear three times? The symbols may be rotated and moved but not reflected.

**Answer**: Enter the two-digit numbers corresponding to the two symbols that appear three times.

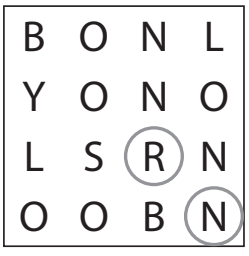
**Example Answer**: `12,22` or `22,12`



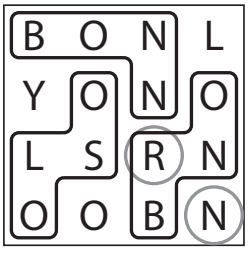

### 6-8. Snake Cities [Zoltán Németh] (6, 4, 11 points)

Locate multiple "snakes" in the grid. Each snake is a path that starts in a cell, goes through some number of cells orthogonally, and ends in a cell. Each cell is used at most once by the snake. The snake may not touch itself, not even diagonally. (In other words, if two cells in the snake touch orthogonally, then they must be exactly one cell apart along the path of the snake, and if two cells in the snake touch diagonally, then they must be exactly two cells apart along the path of the snake.)




Each snake spells out the (English) name of a city. The unused letters in each grid also spell out the name of a city, when read across from left-to-right, top-to-bottom. All cities have a population of at least 600,000 (300,000 in the example).

*The circles are used only for entering your answer.*




**Answer**: For each circled letter, in order from top to bottom, enter the name of the city that contains that letter. Ignore any spaces or symbols that might be in the proper name of the city.

**Example Answer**: `BRNO,LYON`

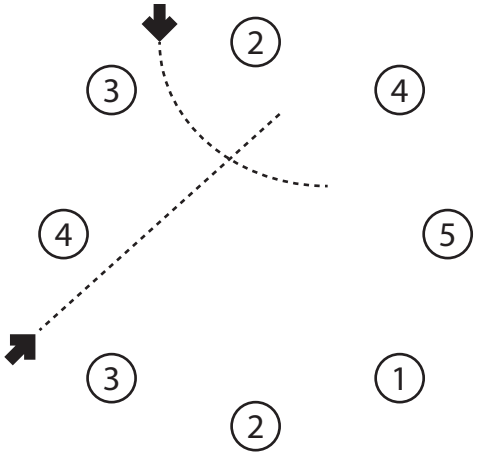
**9-10. Connections [Zoltán Horváth] (3, 9 points)**

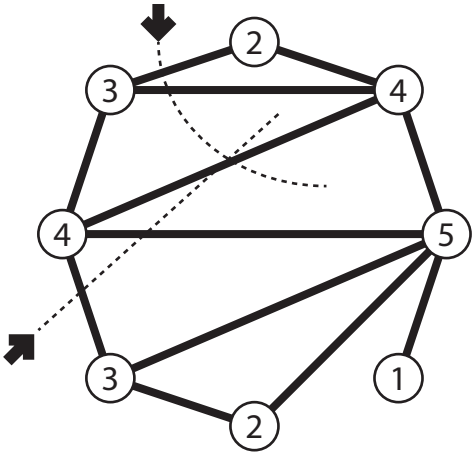
Draw straight connections between numbered circles so that each circle has the appropriate number of connections to other circles. Connections may not go through other circles. Connections may not intersect other connections.

*The dotted curves are used only for entering your answer. Their order will be unambiguous in the competition puzzles.*

**Answer**: For each dotted curve, enter the number of connections that cross that curve.

**Example Answer**: 3,3



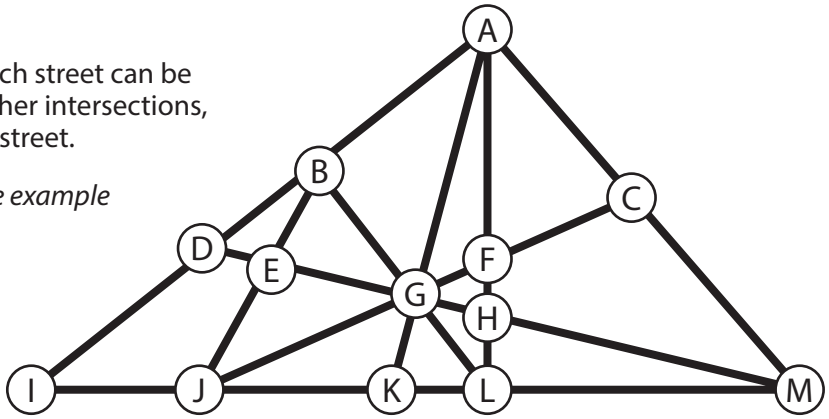

**11-12. Police [Zoltán Horváth] (10, 11 points)**

Place four police officers on intersections so that each street can be seen by at least one officer. Officers can see past other intersections, and it is fine for multiple officers to be on the same street.

*The letters are used only for entering your answer. The example only uses three police officers.*

**Answer**: Enter the letters with police officers, in alphabetical order.

**Example Answer**: AGJ




**13-14. Association Football [Pál Madarassy] (9, 3 points)**

Four association football (soccer) teams play a round-robin tournament, where each team plays each of the other teams in one match. The winner of each match gets 3 match points (MP) while the loser gets 0 MP. If the match has a tie score, then both teams get 1 MP. The four teams are then ranked by total MP (ties are broken by total number of goals scored, then by random coin flip), and the resulting ranking is that Amplistan is ranked highest, followed by Bestrudia, then Conesto, then Delphiz.

| Team | MP |
|---|---|
| Amplistan | ? |
| Bestrudia | |
| Conesto | 3 |
| Delphiz | 2 |

Given a partially-filled scoresheet, determine what possible MP values could go in the space indicated with a question mark.

**Answer**: Enter all possible scores that could be in the space indicated with a question mark, in numerical order from lowest to highest.

**Example Answer**: 57

**15-16. Chess [Zoltán Horváth] (25, 24 points)**

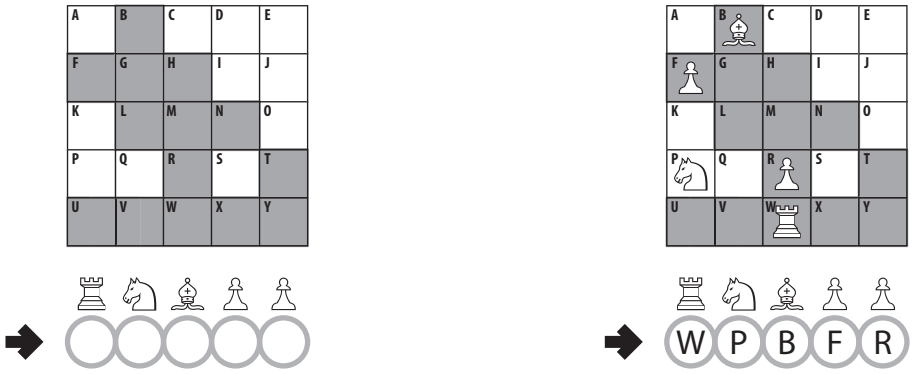
Place the five chess pieces (a rook, knight, bishop, and two pawns) on the board such that all the gray squares are under attack and none of the white squares are under attack.

Pieces can attack pieces of the same color. The rook's and bishop's attacks can be blocked by other pieces. Pawns may be placed anywhere, including the top and bottom row, and attack the two diagonal squares above it. Pieces do not attack themselves.

*The letters in the cells and the circles are used only to help you enter your answer.*

**Answer**: Enter the letters corresponding to the cells with the corresponding pieces. You may enter the cells for the two pawns in either order.

**Example Answer**: `WPBRF` or `WPBFR`




**17-20. Lights and Switches [Zoltán Horváth] (8, 13, 10, 53 points)**

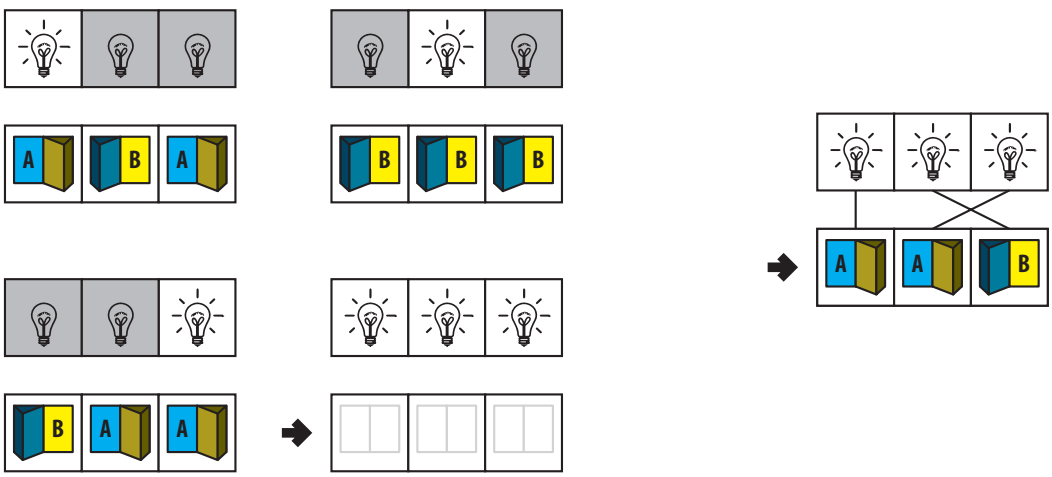
There are several switches and lightbulbs. Each switch is connected to [exactly] one lightbulb. Each lightbulb is connected to [exactly one switch], and turns on when [that switch is] in the "on" position. It is not known which one of "A" or "B" is the "on" position, and it could be different among different switches.

[What position must the switches be in to turn all the lights on?]

*The information in brackets can change from puzzle to puzzle.*

**Answer**: Enter the [correct position of the] switches, from left to right.

**Example Answer**: `AAB`



# Competitive Section (570 total points)

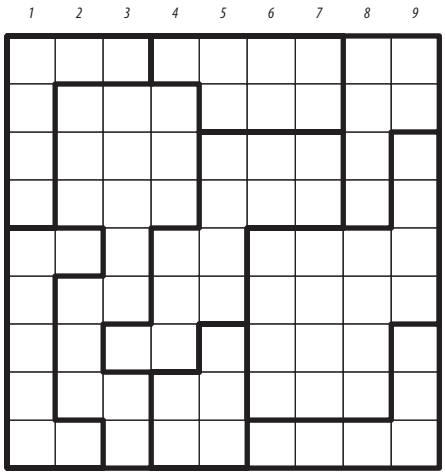
### 21-23. Star Battle [Zoltán Horváth] (14, 29, 78 points)

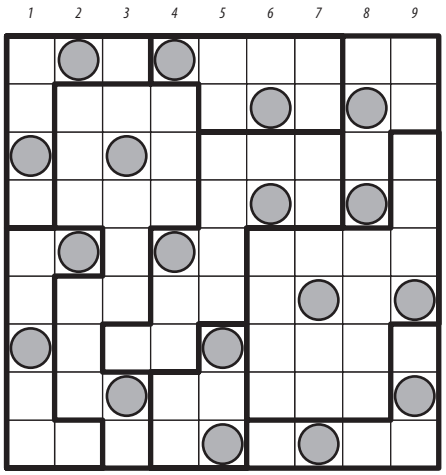
Place stars into some cells in the grid, no more than one star per cell. Each row, each column, and each outlined region must contain exactly two stars. Cells with stars may not touch each other, not even diagonally.

*The numbers on top of the diagram are for Answer purposes only.*

**Answer**: For each row from top to bottom, enter the number of the first column from the left where a star appears (the number on top of that column). Use only the last digit for two-digit numbers; e.g., use '0' if the star piece appears in column 10.

**Example Answer**: `261627135`



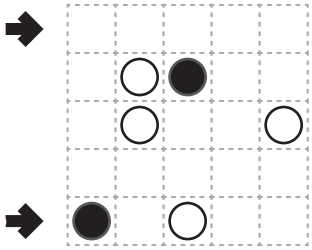



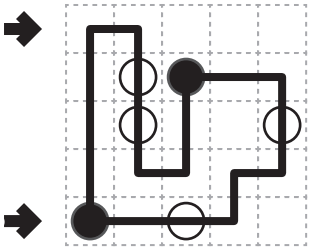

### 24-26. Masyu [Zoltán Horváth] (19, 10, 8 points)

Draw a single, non-intersecting loop that passes orthogonally through all circled cells. The loop must go straight through the cells with white circles, with a turn in at least one of the cells immediately before or after each white circle. The loop must make a turn in all the black circles, but must go straight in both cells immediately before and after each black circle.

**Answer**: For each designated row, enter the letter for each cell, from left to right. The letter for a cell is 'I' if the path goes straight through the cell, 'L' if the path turns in the cell, and 'X' if the path does not go through the cell.

**Example Answer**: `LLXXX,LIILX`



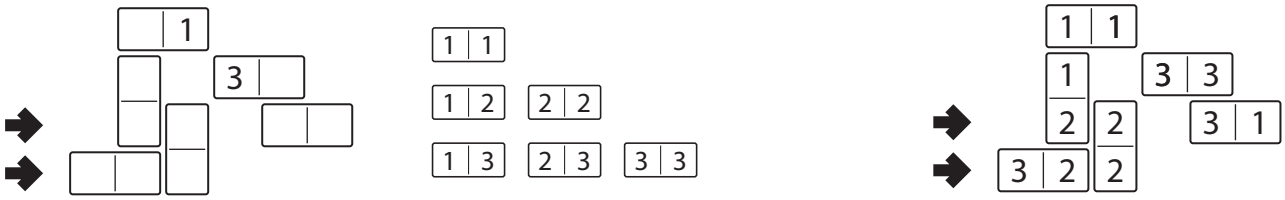


### 27-29. Domino Construction [Zoltán Horváth] (9, 23, 25 points)

Label the dominoes such that the diagram contains a full set of dominoes. If two domino halves touch along an edge (and are not part of the same domino), then they must contain the same number. The orientation of the numbers do not matter. A full set of dominoes will be provided for your convenience; the smallest and largest numbers on the dominoes may change from puzzle to puzzle.

**Answer:** For each designated row, enter all the numbers in that row, from left to right. Skip over any empty spaces between dominoes.

**Example Answer**: `2231,322`

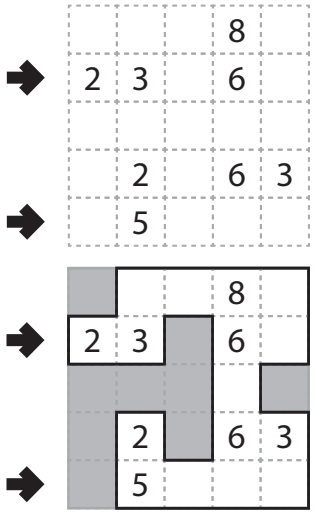



### 30-32. Cave [Zoltán Németh] (27, 35, 29 points)

Shade some cells to leave behind a single connected group — the cave — with no enclosed shaded cells. In other words, all shaded cells must be connected edge-wise by other shaded cells to an edge of the grid. All numbered cells must be a part of the cave, with each number indicating the total count of cells connected in line vertically and horizontally to the numbered cell *including the cell itself*.

**Answer**: For each designated row, enter the length in cells of each of the cave segments (*not the shaded cells outside the cave*) from left to right. Use only the last digit for two digit numbers; e.g., use '`0`' for a segment of length 10. If there are no cells belonging to the cave in the row, enter a single digit '`0`'.

**Example Answer**: `22,4`



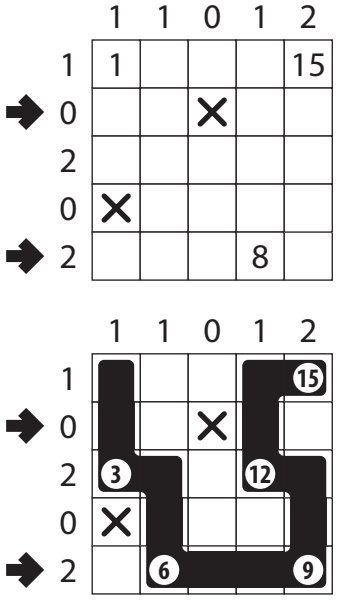

### 33-35. Dotted Snake [Zoltán Horváth] (14, 35, 21 points)

Locate a "snake" in the grid. The snake is a path that starts in a cell, goes through some number of cells orthogonally, and ends in a cell. Each cell is used at most once by the snake. The snake may not touch itself, not even diagonally. (In other words, if two cells in the snake touch orthogonally, then they must be exactly one cell apart along the path of the snake, and if two cells in the snake touch diagonally, then they must be exactly two cells apart along the path of the snake.) Every third cell along the snake has a dot on it. Numbers outside the grid, if given, indicate how many cells in that row or column are occupied by dots.

Some cells are marked with a cross; the snake cannot use those cells. The three cells containing the start (cell 1), middle (cell 23), and end (cell 45) of the snake are provided for you. Cell 45 of the snake is always a dotted cell. *The example puzzle uses a snake of length 15, which means the middle cell is cell 8 and the end cell is cell 15.*

**Answer**: For each designated row, enter its contents. Use `O` for a cell occupied by the snake and `X` for a cell not occupied by the snake.

**Example Answer**: `OXXOX,XOOOO`



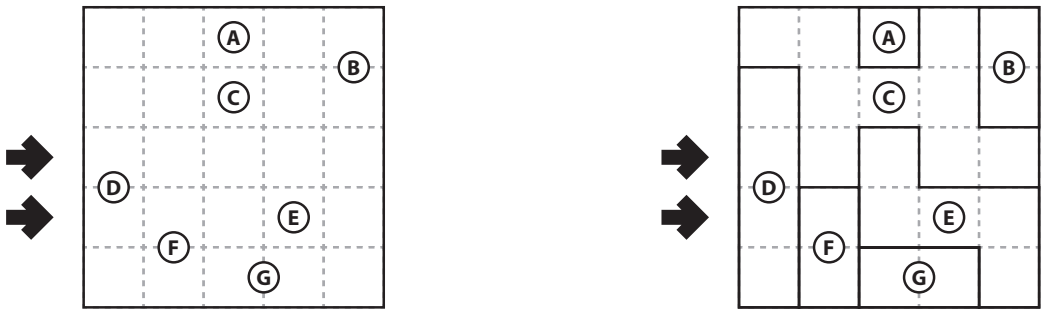
**36-38. Spiral Galaxies [Zoltán Németh] (11, 52, 35 points)**

Divide the grid into polyomino-shaped regions such that each cell is in exactly one region. You may only draw on the grid, as indicated by the dotted lines. Each region must be rotationally symmetric and contain exactly one dot at the point of symmetry.

*The letters inside the dots are for Answer purposes only.*

**Answer**: For each designated row, enter the letter for each cell, from left to right. The letter of a cell is the letter inside the dot that is the point of symmetry for the region that contains that cell.

**Example Answer**: `DCECC,DFEEE`

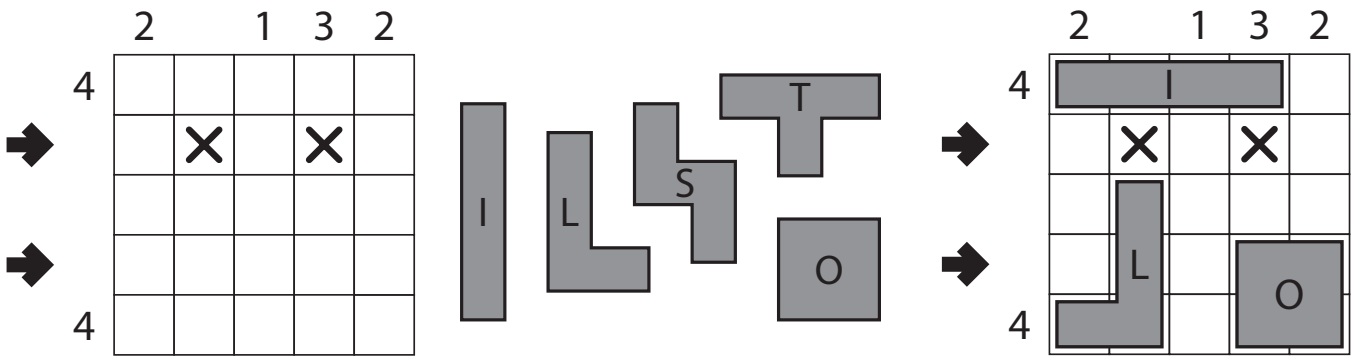



**39-41. Tetromino Search [Zoltán Horváth] (12, 32, 52 points)**

Locate some tetrominoes in the grid. Each piece of a tetromino occupies a single cell. Cells marked with crosses cannot contain a piece of a tetromino. Tetrominoes do not touch each other, not even diagonally (that is, if two tetromino pieces are in adjacent cells, they must be part of the same tetromino).

Each number to the left and top of the grid reveals the number of tetromino pieces that must be located in that row or column.

*The provided set of lettered tetrominoes is for Answer purposes only. It is possible for a tetromino to appear any number of times (including zero) in any orientation.*

**Answer**: For each designated row, enter the contents of each cell belongs to, from left to right. Use 'X' for a cell without a tetromino piece; otherwise use the letter matching the appropriate tetromino.

**Example Answer**: `XXXXX,XLXOO`