

WPF PUZZLE GP 2021 INSTRUCTION BOOKLET

Host Country: Hungary

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Special Notes: Anything printed in **pink** is for decorative purposes only. Due to a data-entry error, an earlier version of this booklet had more puzzles but the wrong total number of points. This version should be correct.

Points:

1.	Arithmetic Square	23	11.	Pentominous	72
2.	Simple Loop	20	12.	BACA (Given Set)	48
3.	Scrabble (Unused Word)	19	13.	Skyscrapers (Relations)	20
4.	Scrabble (Unused Word)	17	14.	Yin-Yang (Equal Regions)	33
5.	SPOLICY	16	15.	Yin-Yang (Equal Regions)	105
6.	SPOLICY	29	16.	Shape Placement	55
7.	Balance Scales	41	17.	Shape Placement	32
8.	Infection	46	18.	Hungarian Numberlink	68
9.	Statue Park	15	19.	Hungarian Numberlink	52
10.	Statue Park	54	20.	Tapa (Unknowns, Coupled)	76
				TOTAL:	841

1. Arithmetic Square [Viktor Samu] (21 points)

Place the numbers from 1 to 9 into the cells (a different single number in each cell) so that the indicated equations/relations are correct. Evaluate from left-to-right and top-to-bottom (ignore the usual precedence of the operators).

It is possible for expressions and partial expressions to be negative or non-integral.

Answer: For each designated row, enter the contents of the cells, in order from left to right.

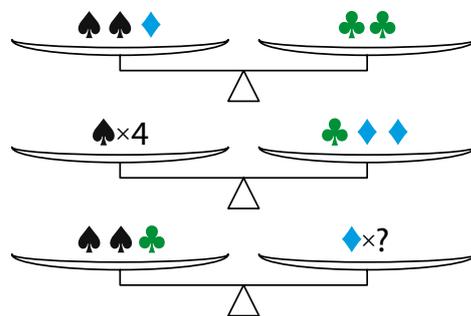
Example Answer:

987, 643, 521

→	$\boxed{} + \boxed{} + \boxed{} > 23$	→	$\boxed{9} + \boxed{8} + \boxed{7} > 23$
	+ - +		+ - +
→	$\boxed{} \times \boxed{} \div \boxed{} = 8$	→	$\boxed{6} \times \boxed{4} \div \boxed{3} = 8$
	× × -		× × -
→	$\boxed{} \times \boxed{} + \boxed{} = 11$	→	$\boxed{5} \times \boxed{2} + \boxed{1} = 11$
	= = =		= = =
	75 8 9		75 8 9

7. Balance Scales [Zoltán Horváth] (41 points)

Several balance scales are given, each with certain symbols (representing weights) depicted on the sides of the scales. Identical symbols have identical weight. (Different symbols may or may not have different weights.) All symbols have positive weight. The scales are balanced, meaning that the sum of the weights on one side is equal to the sum of the weights on the other side. The order of the symbols within each side does not matter. If there are more than two identical symbols on one side, the number of such symbols is indicated after a multiplication sign ("×"). One side of the last scale is marked with a symbol followed by "×?", indicating that that section of the scale has an certain number of that symbol (not necessarily more than two), but you have not been told what that number is. What is that number?



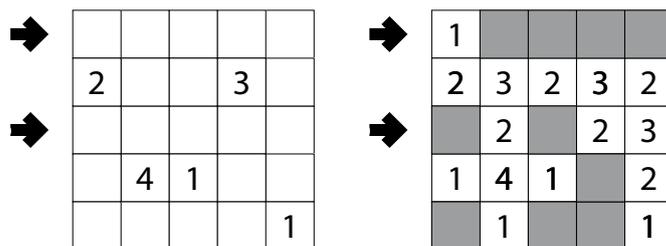
Ignore any colors of the symbols; they are for decorative purposes only.

Answer: Enter the number of symbols that should be on the side of that last scale. Use only the last digit for multi-digit numbers; e.g., use '0' if the number is 10.

Example Answer: 3

8. Infection [Kartal Nagy] (46 points)

Fill some cells with a number from 1 to 4. All numbered cells must be orthogonally connected. Orthogonally adjacent cells cannot contain the same number. Each number must indicate the number of orthogonally adjacent numbered cells. Some numbers are given to you.

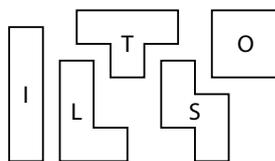


Answer: For each designated row, enter its contents, from left to right. Use 'x' for an empty cell.

Example Answer: 1XXXX, X2X23

9-10. Statue Park [Viktor Samu, Zoltán Horváth] (15, 54 points)

Shade some cells black (leaving the other cells white) so that the grid is divided into non-overlapping regions; cells of the same color are considered in the same region if they are adjacent along edges. The black regions must form the entire set of given shapes; each shape may be rotated and/or reflected in the final answer. Shapes cannot touch along an edge, but can touch at corners. All white cells must be in the same region.

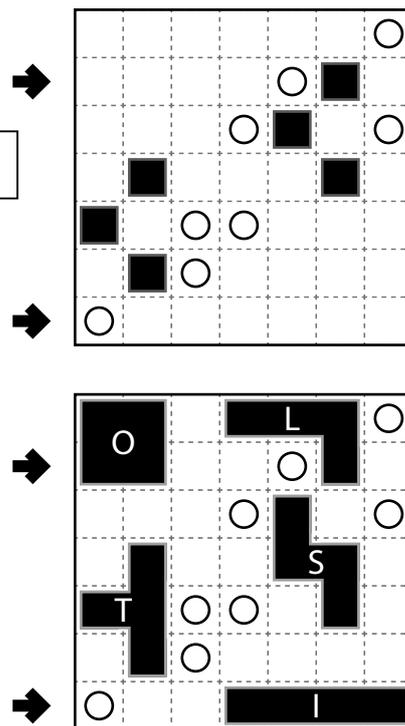


A cell with a black square must be shaded and a cell with a white circle must not be shaded.

The letters on the given shapes are only for entering your answer.

Answer: For each designated row, enter the contents of each cell, from left to right. For each cell, its contents are the letter of the shape occupying that cell, or the letter 'A' if the cell is not shaded.

Example Answer: OOAALA, AAIIII



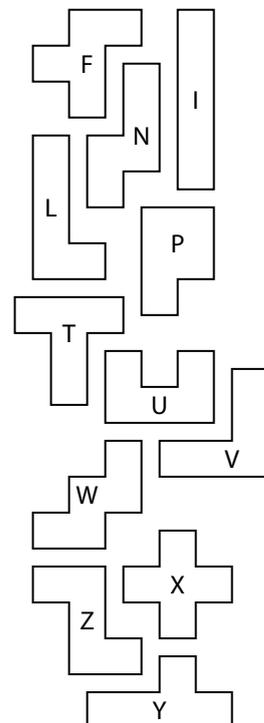
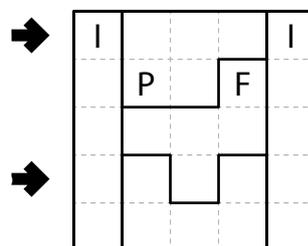
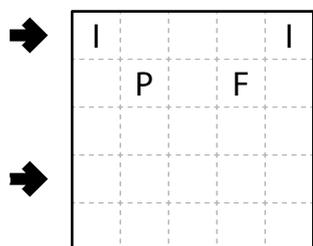
11. Pentominous [Kartal Nagy] (72 points)

Divide the grid into pentominoes such that every cell in the grid is part of exactly one pentomino. Pentominoes of the same shape (rotations and reflections of a pentomino count as the same shape) cannot touch each other along an edge (but they may touch diagonally). Some letters are given in the grid. Each letter must be part of a pentomino with that letter's shape. It is permissible for a pentomino to contain more than one letter. (It is possible for some pentomino shapes to never appear in the grid, or appear more than once.)

The letter-to-shape correspondence for pentominoes has been supplied for you.

Answer: For each designated row, enter the letter for the pentomino that each cell belongs to, from left to right.

Example Answer: IPPPI, IUFUI

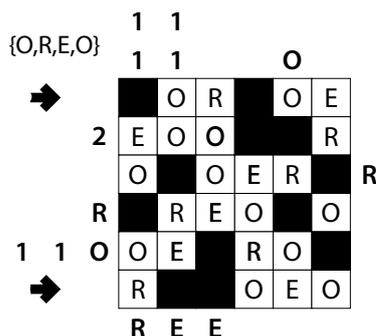
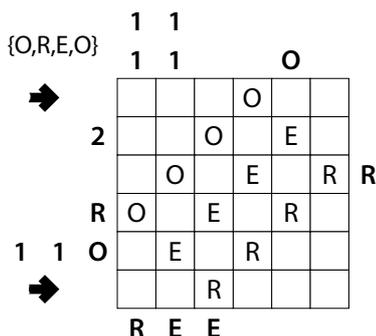


12. BACA (Given Set) [Viktor Samu] (48 points)

Blacken some cells and then place a single letter into every empty cell such that the letters in the given multiset appear in each row and each column. (If a letter appears many times in the multiset, it should appear exactly that number of times in each row and each column.) Some cells already contain a letter; these cells must either be left alone or blackened (which removes that letter from the cell). The letters outside the grid indicate the first letter that can be seen in the respective row or column from the respective direction. When numbers are given to the left of (or above) the main grid, they represent the lengths of all the contiguous blackened cell blocks in the corresponding row (or column). The lengths are given in order from left to right (or top to bottom), and cell blocks must contain at least one unblackened cell between them.

Answer: For each designated row, enter its contents. Do *not* include any letters or numbers outside the grid. Use 'X' for a blackened cell.

Example Answer: XORXOE, RXXOEO



13. Skyscrapers (Relations) [Viktor Samu] (20 points)

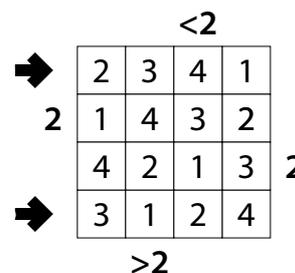
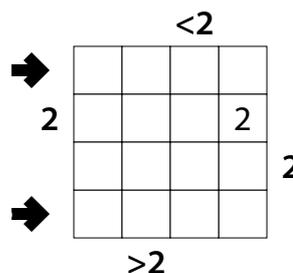
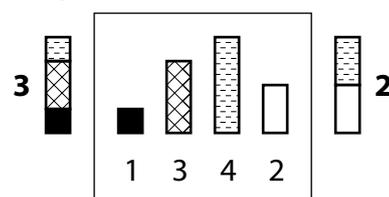
Place a number from 1 to X (integers only) into each cell so that each number appears exactly once in each row and column. (X is the number of cells in each row.) Each number represents a skyscraper of its respective height. The numbers outside the grid indicate how many skyscrapers can be seen in the respective row or column from the respective direction; smaller skyscrapers are hidden behind higher ones. Some numbers may already be filled in for you.

If a number outside the grid is prefixed with a "<" or ">" symbol, that indicates that the actual number is less than or greater than (respectively) the printed number.

Answer: For each designated row, enter its contents from left to right. Do *not* include any numbers outside the grid.

Example Answer: 2341, 3124

Skyscraper Clue Examples



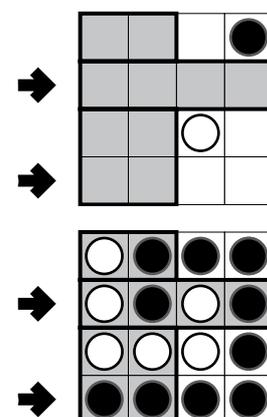
14-15. Yin-Yang (Equal Regions) [Kartal Nagy] (33, 105 points)

Fill each cell with either a black or a white circle. All cells with black circles must be connected orthogonally, and all cells with white circles must be connected orthogonally. Every 2x2 group of cells must contain at least one black circle and at least one white circle. Some cells are already filled in for you.

The grid is divided into regions; some are shaded in gray. In each gray region, the number of black circles and the number of white circles must be equal. In other regions, the number of black and white circles might or might not be equal.

Answer: For each designated row, enter its contents from left to right. Use 'o' for a white cell and 'x' for a black cell. You may use two other letters or numbers, as long as they are distinct.

Example Answer: OXOX, XXXX



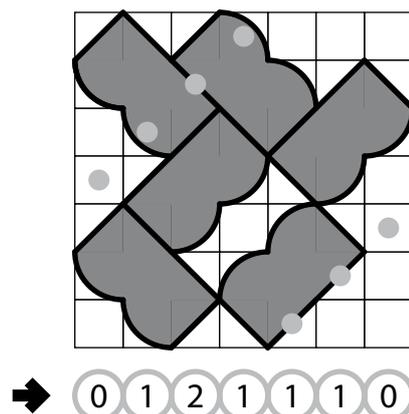
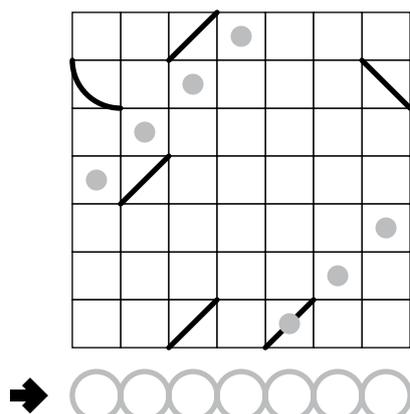
16-17. Shape Placement [Zoltán Horváth] (55, 32 points)

Place some copies of the given shape in the grid by drawing some lines in some cells of the grid. The shapes can touch but cannot overlap. The shapes can be reflected and can be rotated with an angle of any multiple of 90°. Some lines are already given in the grid; all these lines must be part of at least one placed shape.

The dots in cells are only used for entering your answers.

Answer: Enter the number of shapes that occupy the cell each dot is in, reading the dots from left to right. (Ignore which row the dots are in.)

Example Answer: 0121110



18-19. Hungarian Numberlink [Viktor Samu, Kartal Nagy] (68, 52 points)

Some cells in the grid are marked with numbers. Draw some paths on the grid so that the two endpoints of every path are on cells with numbers. Each number must be the endpoint of exactly one path. The paths must go through orthogonally adjacent cells. Each cell must be visited by exactly one path, and may not be visited more than once by that path.

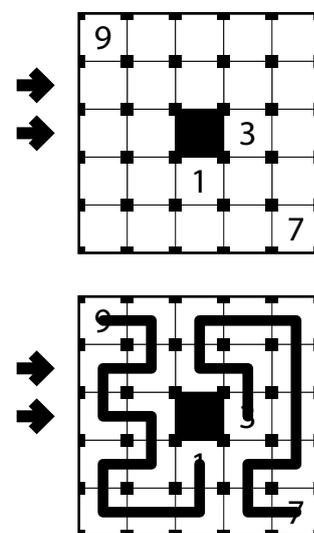
For each path, the number of cells where the path goes straight through the cell must match the number at one endpoint of the path, and the number of cells where the path makes a turn at the cell must match the number at the other endpoint of the path.

Black areas are not part of the grid and are not cells.

The dots in cells are only used for entering your answers.

Answer: For each designated row, enter the letter for each cell, from left to right. The letter for a cell is 'I' if a path goes straight through the cell, 'L' if a path turns in the cell, and 'X' if the cell is an endpoint of a path. Do not enter anything for black areas (which are not cells) You may use other letters or numbers, as long as they are distinct.

Example Answer: LLLLLI, LLXI



20. Tapa (Unknowns, Coupled) [Kartal Nagy] (76 points)

Shade some empty cells black; cells with numbers cannot be shaded. All black cells connect along edges to create a single connected region. (It is permissible for the region to touch itself at a corner, but touching at a corner does not connect the region.) No 2x2 group of squares can be entirely shaded black.

Numbers in a cell indicate the lengths of contiguous black cell groups along the "ring" of 8 cells touching that cell (fewer for cells along the outside edge). If there is more than one number in a cell, then there must be at least one white (unshaded) cell between the black cell groups. The numbers are given in *no particular order*. As a special case, if the number given in a cell is a zero (0), it means that none of the cells around that cell can be shaded black.

Some *non-zero* numbers have been replaced with question marks ('?'). Their value is for you to determine.

The two grids are marked with the same pattern of gray cells. Corresponding gray cells in both grids must be shaded identically in both grids; corresponding white cells in both grids must *not* be shaded identically in both grids. (Cells with numbers will be clearly indicated as gray or white.)

Answer: For each designated row, enter the length in cells of each of the shaded segments from left to right. Use only the last digit for two-digit numbers; e.g., use '0' for a segment of size 10. If there are no black cells in the row, enter a single digit '0'.

Example Answer: 12, 211, 111, 5

Tapa Clue Examples

