

WPF PUZZLE GP 2020 INSTRUCTION BOOKLET

Host Country: India

Prasanna Seshadri, Rakesh Rai

Special Notes: Point values are not determined yet.

Points:			15.	Skyscrapers	XX
1.	Fill in the Blanks	XX	16.	Snake	XX
2.	Arithmetic Square	XX	17.	Snake	XX
3.	Scrabble	XX	18.	Snake	XX
4.	Letter Weights	XX	19.	Tom Tom	XX
5.	Spiral Galaxies	XX	20.	Tom Tom	XX
6.	Spiral Galaxies	XX	21.	Tom Tom (Operations)	XX
7.	Spiral Galaxies + Tetrominoes	XX	22.	Statue Park	XX
9.	Nurikabe	XX	23.	Statue Park	XX
8.	Nurikabe	XX	24.	Statue Park	XX
10.	Nurikabe	XX	25.	Loop (Tapa)	XX
11.	Futoshiki	XX	26.	Loop (Tapa)	XX
12.	Futoshiki (Nonconsecutive)	XX	27.	Loop (Tapa)	XX
13.	Skyscrapers	XX			
14.	Skyscrapers	XX	TOTAL:		XXX

1. Fill in the Blanks [Rakesh Rai] (XX points)

Determine what should replace the "?" symbols to make the most sensible pattern.

Answer: What replaces the "?" symbols. Do not use any separating characters.

Example Answer: 2134

2, 3, 5, 8, 13, ?, ?

2. Arithmetic Square [Rakesh Rai] (XX 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

$\rightarrow \begin{array}{c} \square + \square + \square > 23 \\ + \quad - \quad + \\ \square \times \square \div \square = 8 \\ \times \quad \times \quad - \\ \square \times \square + \square = 11 \\ = \quad = \quad = \\ 75 \quad 8 \quad 9 \end{array}$	$\rightarrow \begin{array}{c} 9 + 8 + 7 > 23 \\ + \quad - \quad + \\ 6 \times 4 \div 3 = 8 \\ \times \quad \times \quad - \\ 5 \times 2 + 1 = 11 \\ = \quad = \quad = \\ 75 \quad 8 \quad 9 \end{array}$
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3. Scrabble [Rakesh Rai] (XX points)

Put at most one letter into each cell so that the given words can be read either across (left-to-right) or down (top-to-bottom) in consecutive cells in the grid. Every word must appear in the grid exactly once, and no other words may appear in the grid (that is, if two cells are filled and are adjacent, then there must be a word that uses both of them). Every word must have either a blank cell or the edge of the grid before and after it. All letters must be (orthogonally) connected in a single group.

Copies of some letters are already supplied in the grid. All instances of those letters are given.

Answer: For each designated row, enter its contents from left to right, ignoring any blank cells. If all cells in the row are blank, enter a single letter 'X'.

Example Answer: CYPRUSO, ONMUO, AUR, GA

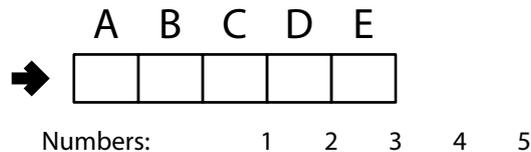
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4. Letter Weights [Rakesh Rai] (XX points)

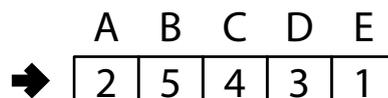
Write a number under each letter (in each cell) so that the numbers corresponding to the letters in each given word have the given sum. Different letters must have different numbers. The list of allowed numbers is given in a row underneath the cells.

Answer: Enter the contents of the cells, from left to right. Enter all digits for multi-digit numbers (for example, if the cell contents were 12, then 5, then 25, enter 12525).

Example Answer: 25431



CAB = 11
BEE = 7
ABE = 8



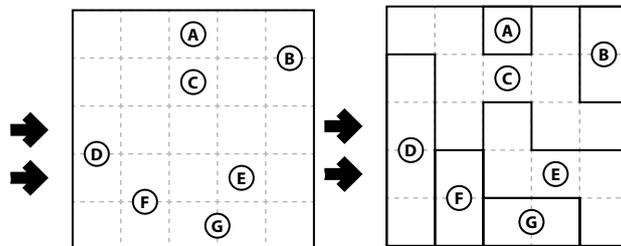
5-6. Spiral Galaxies [Rakesh Rai] (XX, XX points)

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 circle at the point of symmetry.

The letters inside the circles 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 circle that is the point of symmetry for the region that contains that cell.

Example Answer: DCECC, DFEEE



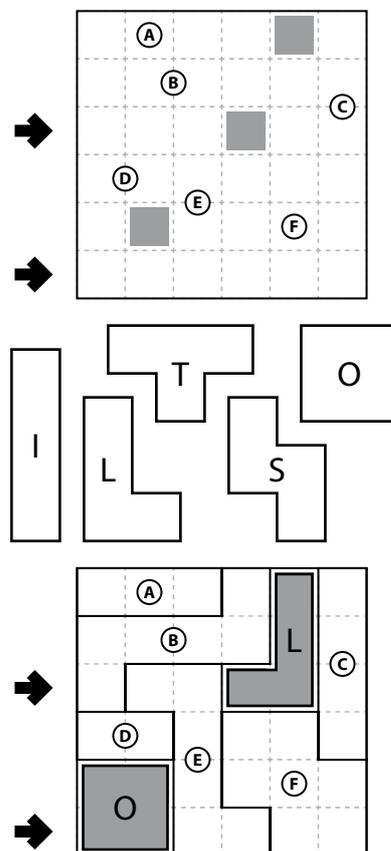
7. Spiral Galaxies + Tetrominoes [Rakesh Rai] (XX points)

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 is either a "galaxy" or a "shaded tetromino". Each galaxy must be rotationally symmetric and contain exactly one dot at the point of symmetry. Each tetromino shape is used as a shaded tetromino at most once, but can be rotated or reflected. Shaded tetrominoes cannot contain or touch dots and cannot touch other tetrominoes along edges. Some shaded tetromino cells may be given to you.

The letters inside the dots are for Answer purposes only. The letters for the tetrominoes, as will be provided in the diagram, are also only used for entering your answer.

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 galaxy that contains that cell, or the letter corresponding to the shape of the shaded tetromino containing that cell.

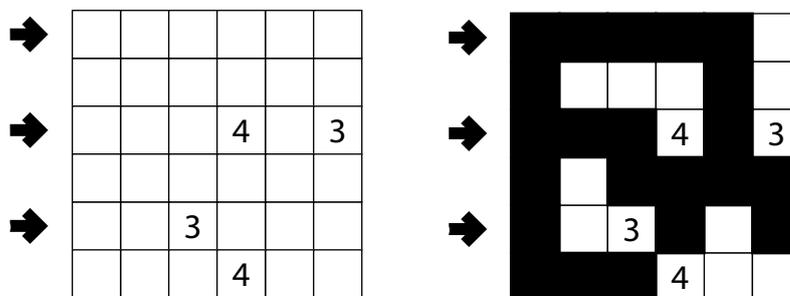
Example Answer: BEELLC, OOEFFF





8-10. Nurikabe [Rakesh Rai, Prasanna Seshadri, Prasanna Seshadri] (XX, XX, XX points)

Shade some empty (non-numbered) 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. Each given number must be in a white region that has the same area in cells as that number. Each white region must have exactly one given number. All black cells must be in the same region. No 2x2 group of cells can be entirely shaded black.

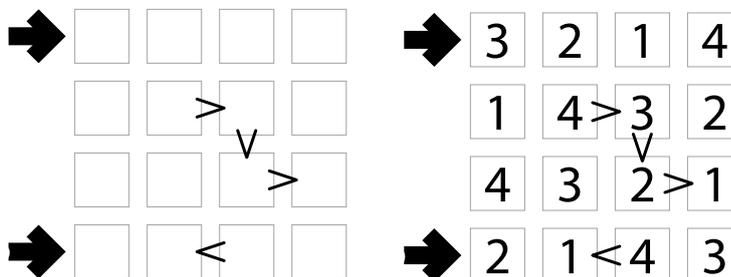


Answer: For each designated row, enter the lengths (number of cells) of the black segments from left to right. If there are no black cells in the row, enter a single digit '0'. Use only the last digit for two-digit numbers; e.g., use '0' for a black segment of length 10.

Example Answer: 5, 31, 111

11. Futoshiki [Rakesh Rai] (XX 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.) Some inequality relations are given between adjacent cells; they must apply to the numbers in those cells.



Answer: For each designated row, enter its contents.

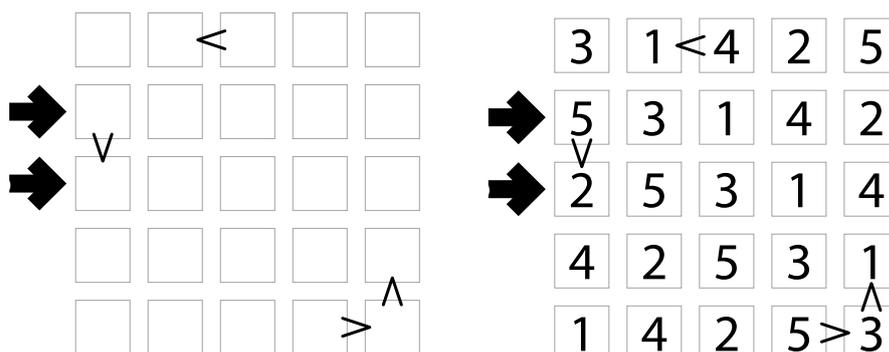
Example Answer: 3214, 2143

12. Futoshiki (Nonconsecutive) [Rakesh Rai] (XX 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.) Some inequality relations are given between adjacent cells; they must apply to the numbers in those cells.

Cells that are orthogonally adjacent must not contain consecutive numbers.

Answer: For each designated row, enter its contents.

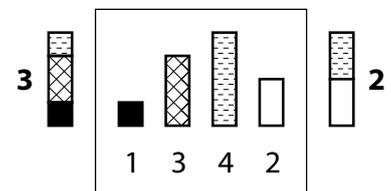


Example Answer: 53142, 25314

13-15. Skyscrapers [Prasanna Seshadri, Rakesh Rai, Prasanna Seshadri] (XX, XX, XX points)

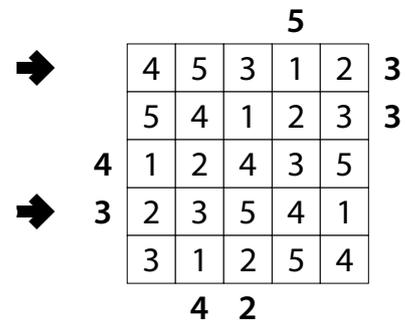
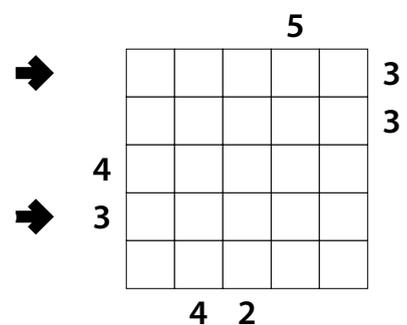
Place a number from 1 to X (integers only) into each cell so that each number appears exactly once in each row and column. (X is the number of cells in each row.) Each number represents a skyscraper of its respective height. The numbers outside the grid indicate how many skyscrapers can be seen in the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

Skyscraper Clue Examples



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

Example Answer: 45312, 23541



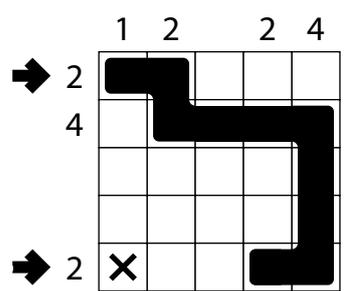
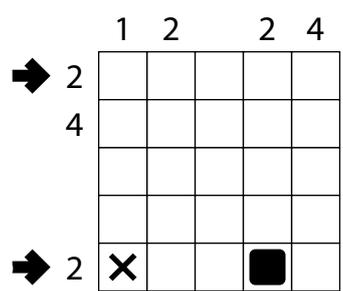
16-18. Snake [Prasanna Seshadri] (XX, XX, XX points)

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 loop around to 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.) Numbers outside the grid, if given, indicate how many cells in that row or column are occupied by the snake.

A rounded square in a cell (when provided) indicates the end of the snake. A cross in a cell (when provided) indicates that the snake cannot go through the cell.

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. You may use two other letters or numbers, as long as they are distinct.

Example Answer: OXXXX, XXXOO

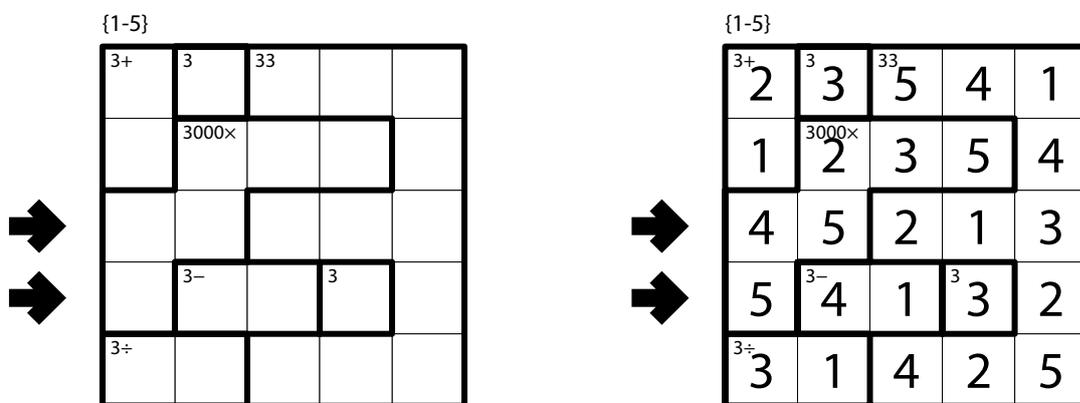


19-20. Tom Tom [Rakesh Rai] (XX, XX points)

Place a number from 1 to X into each cell so that each number appears exactly once in each row and column. (X is the number of cells in each row.) Numbers may repeat within a region. The number in the upper-left corner of each outlined region indicates the value of one of the four basic operations applied to all numbers in the region, starting with the largest number for subtraction and division (e.g., 1, 2, 4 with division has a clue of $2 \div$ as $4 \div 2 \div 1 = 2$). The operation may or may not be given in the region, but at least one of the four operations must apply.

Answer: For each designated row, enter its contents, from left to right. Use only the last digit for two digit numbers; e.g., use '0' for a cell that contains the number 10.

Example Answer: 45213, 54132

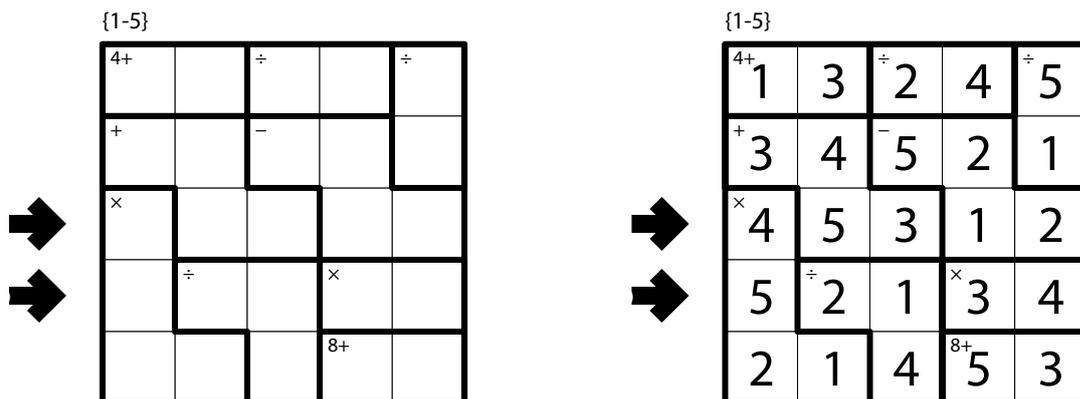


21. Tom Tom (Operations) [Rakesh Rai] (XX points)

Place a number from 1 to X into each cell so that each number appears exactly once in each row and column. (X is the number of cells in each row.) Numbers may repeat within a region. The number in the upper-left corner of each outlined region indicates the value of the given operation applied to all numbers in the region, starting with the largest number for subtraction and division (e.g., 1, 2, 4 with division has a clue of $2 \div$ as $4 \div 2 \div 1 = 2$). The number may or may not be given in the region; but its value must be a whole number (that is, not negative or fractional — a value of 0 is permitted).

Answer: For each designated row, enter its contents, from left to right. Use only the last digit for two digit numbers; e.g., use '0' for a cell that contains the number 10.

Example Answer: 45312, 52134



22-24. Statue Park [Rakesh Rai, Prasanna Seshadri, Prasanna Seshadri] (XX, XX, XX points)

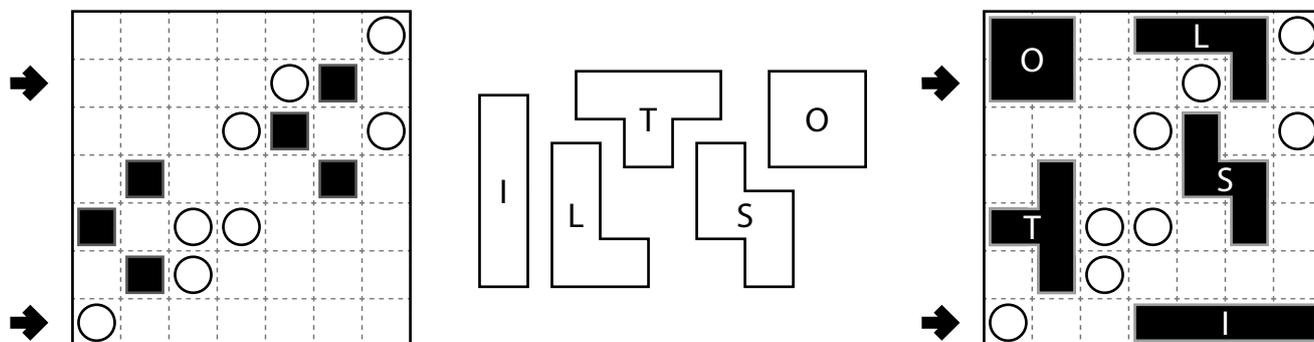
Shade some cells black (leaving the other cells white) so that the grid is divided into non-overlapping regions; cells of the same color are considered in the same region if they are adjacent along edges. The black regions must form the set of given shapes; each shape may be rotated and/or reflected 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



25-27. Loop (Tapa) [Prasanna Seshadri] (XX, XX, XX points)

Draw a single closed loop through some cells. The loop may not intersect itself, go through a cell corner, or go through a cell more than once. The loop must go through the center of every cell it goes through and all turns in the loop must be at cell centers.

Numbers in a cell indicate the lengths of all loop segments within the "ring" of 8 cells touching that cell (fewer for cells along the outside edge). 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 are part of the loop. Cells with numbers must not be part of the loop.

This is a Loop puzzle with Tapa-like constraints, not a Tapa puzzle with a loop constraint. For example, there is no 2x2 constraint in this puzzle, and adjacent cells that are part of the path only count for a clue if they are connected.

Answer: For each designated row, enter the letter for each cell, from left to right. The letter for a cell is 'I' if the loop goes straight through the cell, 'L' if the loop turns in the cell, and 'X' if the path does not go through the cell (including cells that have numbers). You may use other letters or numbers, as long as the three characters you choose are distinct from each other.

Example Answer: LLXILL, XLLLIL

