WPF SUDOKU/PUZZLE **GRAND PRIX** 2021

ROUND 6

WPF PUZZLE GP 2021 INSTRUCTION BOOKLET

Host Country: USA

Thomas Snyder, Serkan Yürekli

Special Notes: Point values are not determined yet. The competition word lists for puzzles 1, 12, and 18 contain extraneous italicized words (in cyan) for aesthetic purposes only; they can safely be ignored for puzzle-solving purposes.

Points:					
1.	**Word Search**	**XX**	**10.**	**Skyscrapers**	**XX**
2.	**Pentominous**	**XX**	**11.**	**TomTom**	**XX**
3.	**Spiral Galaxies**	**XX**	**12.**	**Meandering Words**	**XX**
4.	**Yajilin**	**XX**	**13.**	**Pentominous (Spiral Galaxies)**	**XX**
5.	**Castle Wall**	**XX**	**14.**	**Yajilin (Castle Wall)**	**XX**
6.	**LITS**	**XX**	**15.**	**LITS (Tapa)**	**XX**
7.	**Tapa**	**XX**	**16.**	**Star Battleships**	**XX**
8.	**Battleships**	**XX**	**17.**	**SkyTomTom**	**XX**
9.	**Star Battle**	**XX**	**18.**	**Meandering Wordsearch**	**XX**
			TOTAL:		XXX

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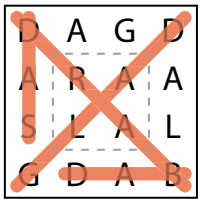
1. Word Search [Serkan Yürekli] (XX points)

Locate the list of words in the grid. Words always appear in a line in one of the eight standard directions. Some letters in the middle of the grid (inside the dotted lines) are missing and you must discover what they are while solving.

Answer: Enter the missing letters from top row to bottom row, entering each row in order from left to right.

Example Answer: `RALA`

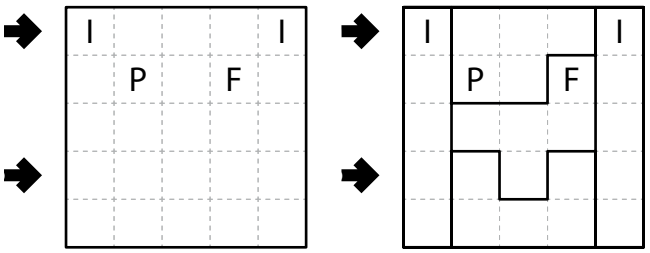
D	A	G	D	GLAD
A			A	SAD
S			L	BAD
G	D	A	B	DRAB



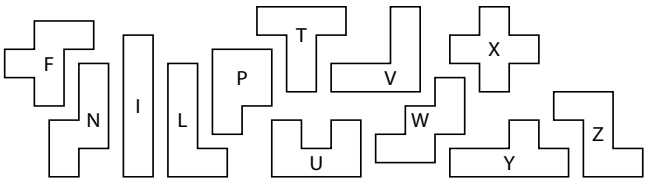
GLAD
SAD
BAD
DRAB

2. Pentominous [Serkan Yürekli] (XX 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 more than once.)



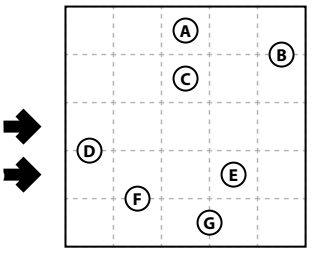
The letter-to-shape correspondence for pentominoes has been supplied for you.



In the competition puzzle, there may be black areas that are not part of the grid.

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

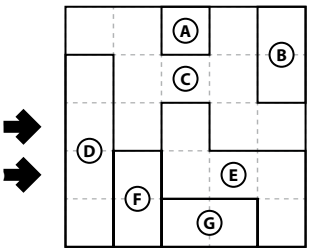
Example Answer: `IPPPI,IUFUI`



3. Spiral Galaxies [Serkan Yürekli] (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.

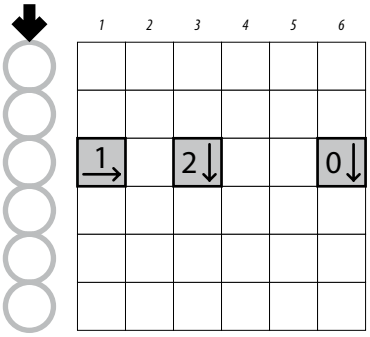
Example Answer: `DCECC,DFEEE`

4. Yajilin [Thomas Snyder] (XX points)

Draw a single closed loop passing through some empty cells in the grid. The loop connects centers of adjacent cells, makes only right-angle turns or goes straight, and does not intersect or cross itself.

Some cells will remain empty; such cells are "unused" and cannot share an edge with each other.

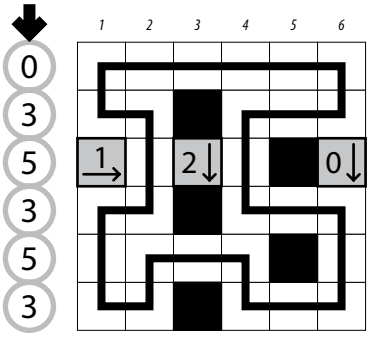
The grid contains some outlined gray cells that cannot be part of the loop. Numbered arrows in such cells indicate the total number of unused cells along the direction of the arrow, starting in the arrowed cell and going along a row or column to the edge of the grid.



The numbers on top of the diagram are for Answer purposes only. It may be helpful to shade the unused cells, as per the example answer.

Answer: For each row from top to bottom, enter the column number of the left-most unused cell. (Outlined cells are not unused.) Use only the last digit for two-digit numbers; e.g., use '0' for column 10. If none of the cells in a row are blackened, enter '0' for that row.

Example Answer: `035353`



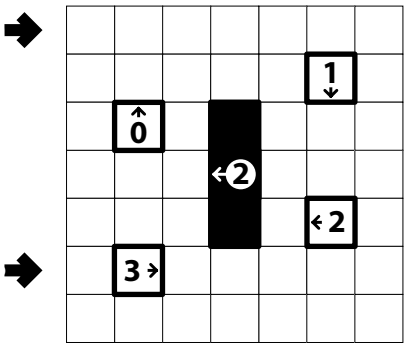
5. Castle Wall [Thomas Snyder] (XX points)

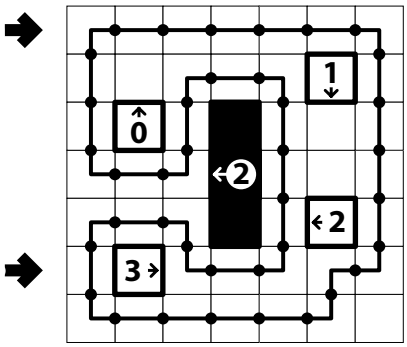
Draw a single closed loop passing through some empty cells in the grid. The loop connects centers of adjacent cells, makes only right-angle turns or goes straight, and does not intersect or cross itself.

The grid contains some outlined white and black cells that cannot be part of the loop. Outlined white cells must be inside the loop; black cells must be outside the loop. Numbers and arrows refer to the total sum of the lengths of straight loop segments along the given direction. (An equivalent way to understand these values is by putting a dot each place the loop crosses a cell border. Each numbered arrow then points to that number of dots.)

Answer: For each designated row, enter its contents, from left to right. Use 'I' for a cell where the loop goes straight, use 'L' for a cell where the loop makes a turn, and use 'X' for cells that are not part of the loop.

Example Answer: LIIIIIL, IXLILLL





6. LITS [Serkan Yürekli] (XX points)

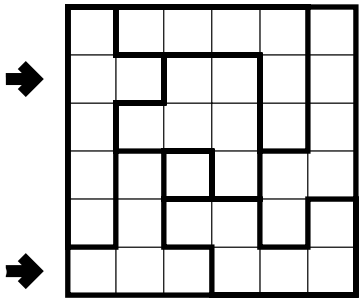
Shade exactly four connected cells in each outlined region (with at least four cells) to form a tetromino, so that the following conditions are true: (1) All tetrominoes are connected into one large shape along their edges; (2) No 2×2 group of cells can be entirely shaded; (3) When two tetrominoes share an edge, they must not be of the same shape, regardless of rotations or reflections. (Not all four possible shapes have to be present in the grid; for example, it is possible for your solution to not have any "I" shapes.)

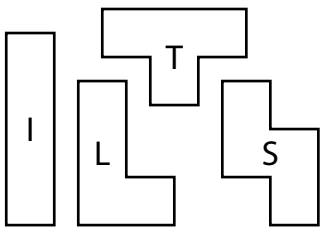
Regions with fewer than four cells will not have any shaded cells.

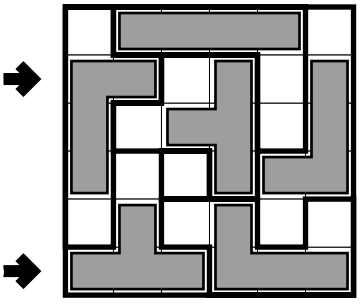
A list of shapes to the letters "LITS" is provided. This is only needed for entering your answer.

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 tetromino occupying that cell, or the letter 'X' if the cell is not shaded.

Example Answer: LLXTXL, TTTLLL

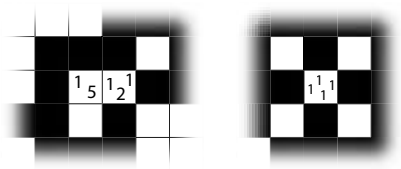






7. Tapa [Serkan Yürekli] (XX points)

Tapa Clue Examples

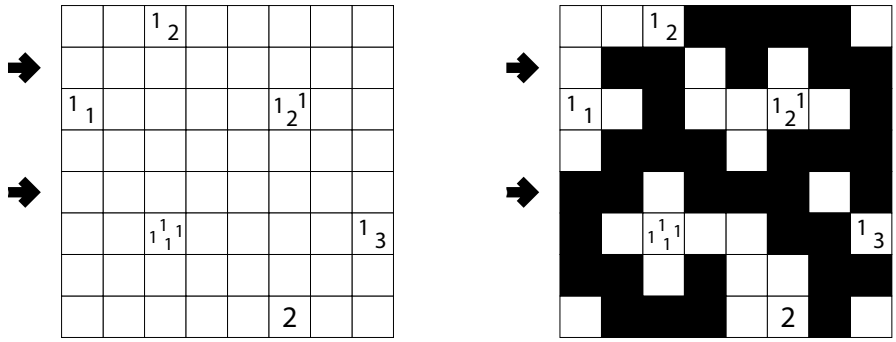


Shade some empty cells black; cells with numbers cannot be shaded. All black cells connect along edges to create a single connected region. (It is permissible for the region to touch itself at a corner, but touching at a corner does not connect the region.) No 2×2 group of squares can be entirely shaded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

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: `212,231`



8. Battleships [Thomas Snyder] (XX points)

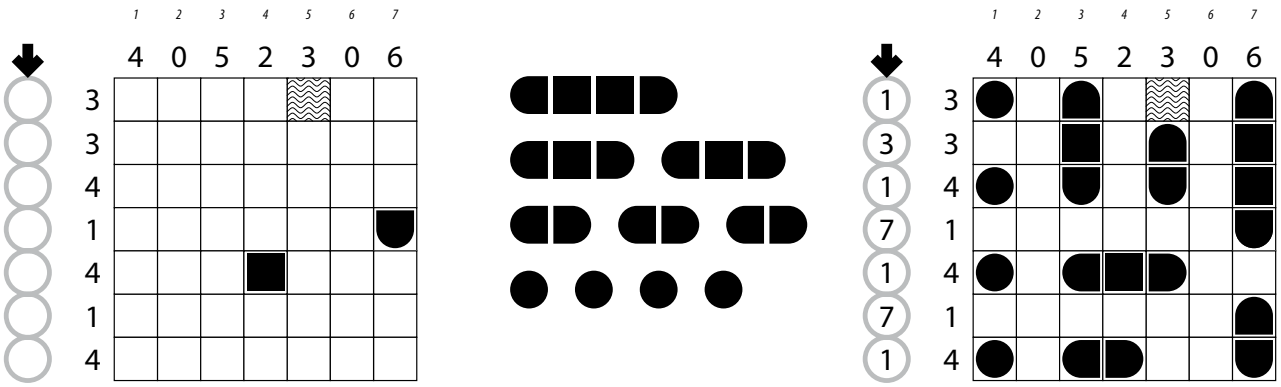
Locate the indicated fleet of ships in the grid. Ships may be rotated before being placed in the grid. Each piece of a ship occupies a single cell. A cell that does not contain a ship piece is considered "sea". Ships do not touch each other, not even diagonally (that is, if two ship pieces are cells that share an edge or a corner, they must be part of the same ship). The contents of some cells are given for you.

Each number to the top and left of the grid reveals the number of ship pieces that must be located in that row or column (including any that might be given for you).

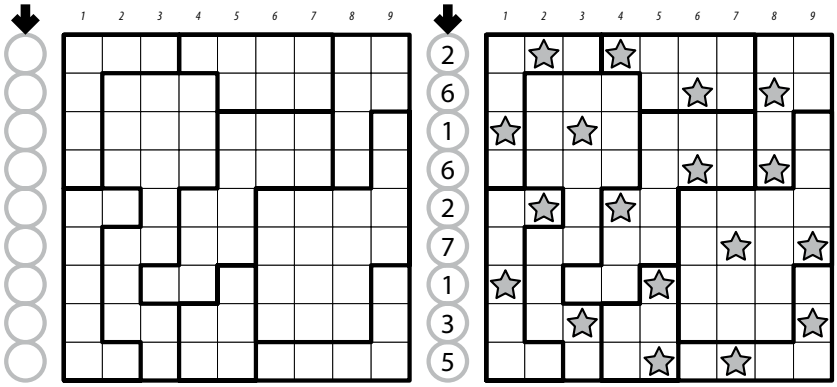
The numbers on the far top of the diagram are for Answer purposes only.

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

Example Answer: `1317171`



9. Star Battle [Thomas Snyder] (XX 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.

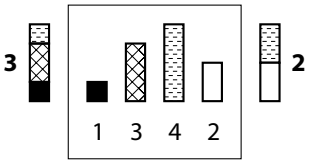
The numbers on top of the diagram are for Answer purposes only.

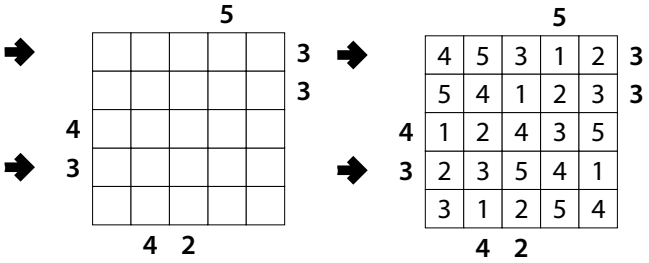
Answer: For each row from top to bottom, enter the number of the first column from the left where a star appears (the number on top of that column). Use only the last digit for two-digit numbers; e.g., use '0' if the first star appears in column 10.

Example Answer: 261627135

10. Skyscrapers [Thomas Snyder] (XX points)

Skyscraper Clue Examples



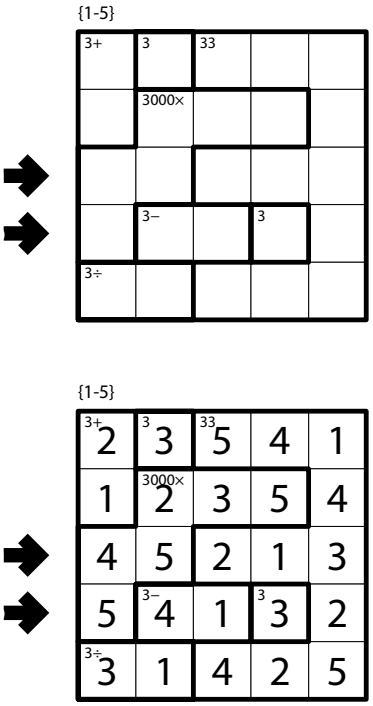


Place a number from 1 to X (integers only) into each cell so that each number appears exactly once in each row and column. (X is the number of cells in each row.) Each number represents a skyscraper of its respective height. The numbers outside the grid indicate how many skyscrapers can be seen in the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

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

Example Answer: 45312, 23541

11. TomTom [Thomas Snyder] (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÷ as 4÷2÷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

12. Meandering Words [Serkan Yürekli] (XX points)

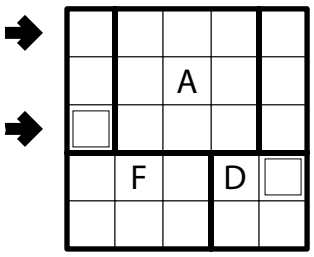
Place a letter into each empty cell so that each cell has exactly one letter and cells that contain the same letter do not touch each other along an edge or a corner. Each outlined area must contain the letters from one of the words in the word list such that it must be possible to draw a path that spells out the word, going through each cell exactly once.

If a cell is marked with a square, it means that cell is where the path begins. Not all such cells are marked.

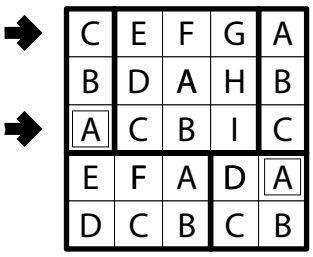
You may only use the same word in multiple regions if that word appears multiple times in the word list, and it may not be used in more regions than the number of times it appears in the list.

Answer: For each designated row, enter its contents.

Example Answer: `CEFGA,ACBIC`



A B C
A B C
A B C D
A B C D E F
A B C D E F G H I



13. Pentominous (Spiral Galaxies) [Serkan Yürekli] (XX 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 more than once.)

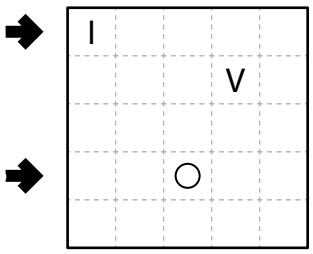
The letter-to-shape correspondence for pentominoes has been supplied for you.

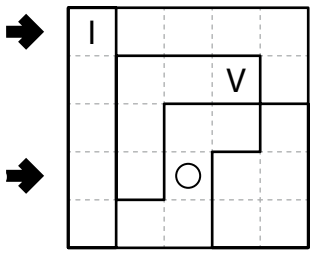
Each circle must be inside a rotationally-symmetric pentomino and must be at that pentomino's point of symmetry. (Not all such circles are given.)

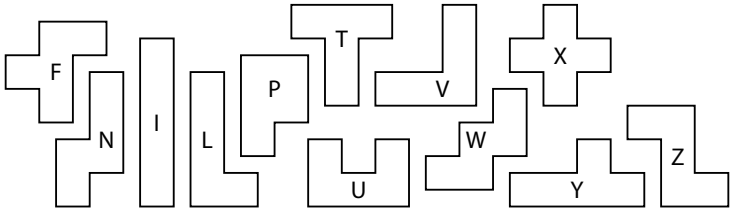
In the competition puzzle, there may be black areas that are not part of the grid.

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

Example Answer: `ILLLL,IVZPP`

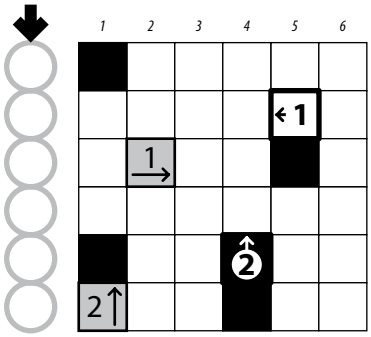






14. Yajilin (Castle Wall) [Thomas Snyder] (XX points)

Draw a single closed loop passing through some empty cells in the grid. The loop connects centers of adjacent cells, makes only right-angle turns or goes straight, and does not intersect or cross itself.

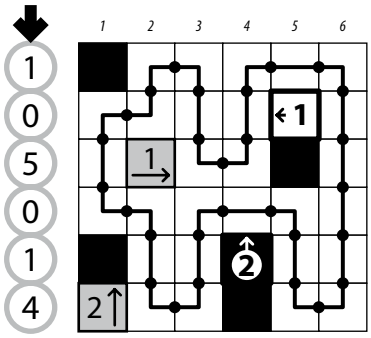


Some cells will remain empty; such cells are "unused" and cannot share an edge with each other.

The grid contains some outlined white, gray, and black cells that cannot be part of the loop. Outlined white cells must be inside the loop; black cells must be outside the loop. Gray cells can be inside or outside the loop.

Numbers and arrows in white or black cells refer to the total sum of the lengths of straight loop segments along the given direction. (An equivalent way to understand these values is by putting a dot each place the loop crosses a cell border. Each numbered arrow then points to that number of dots.)

Numbered arrows in gray cells indicate the total number of unused cells along the direction of the arrow, starting in the arrowed cell and going along a row or column to the edge of the grid.

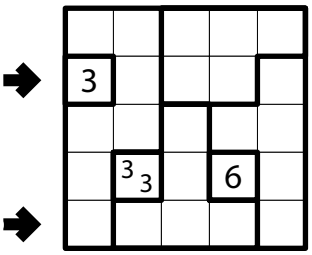


The numbers on top of the diagram are for Answer purposes only. It may be helpful to shade the unused cells, as per the example answer.

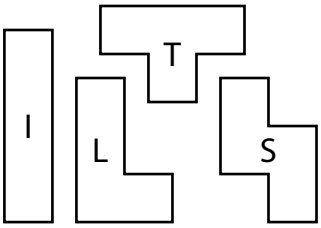
Answer: For each row from top to bottom, enter the column number of the left-most unused cell. (Outlined cells are not unused.) Use only the last digit for two-digit numbers; e.g., use '0' for column 10. If none of the cells in a row are blackened, enter '0' for that row.

Example Answer: `105014`

15. LITS (Tapa) [Serkan Yürekli] (XX points)

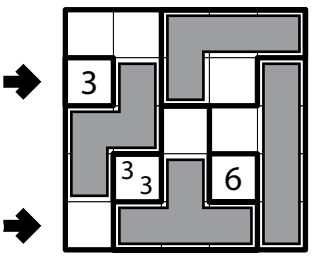


Shade exactly four connected cells in each outlined region (with at least four cells) to form a tetromino, so that the following conditions are true: (1) All tetrominoes are connected into one large shape along their edges; (2) No 2×2 group of cells can be entirely shaded; (3) When two tetrominoes share an edge, they must not be of the same shape, regardless of rotations or reflections. (Not all four possible shapes have to be present in the grid; for example, it is possible for your solution to not have any "I" shapes.)



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.

A list of shapes to the letters "LITS" is provided. This is only needed for entering your answer.



Answer: For each designated row, enter its contents from left to right. For each cell, its contents are the letter of the tetromino occupying that cell, or the letter 'X' if the cell is empty (or contains numbers).

Example Answer: `XSLXI,XTTTI`

16. Star Battleships [Thomas Snyder] (XX points)

Locate the indicated fleet of ships in the grid. Ships may be rotated before being placed in the grid. Each piece of a ship occupies a single cell. A cell that does not contain a ship piece is considered "sea". Ships do not touch each other, not even diagonally (that is, if two ship pieces are cells that share an edge or a corner, they must be part of the same ship). The contents of some cells are given for you.

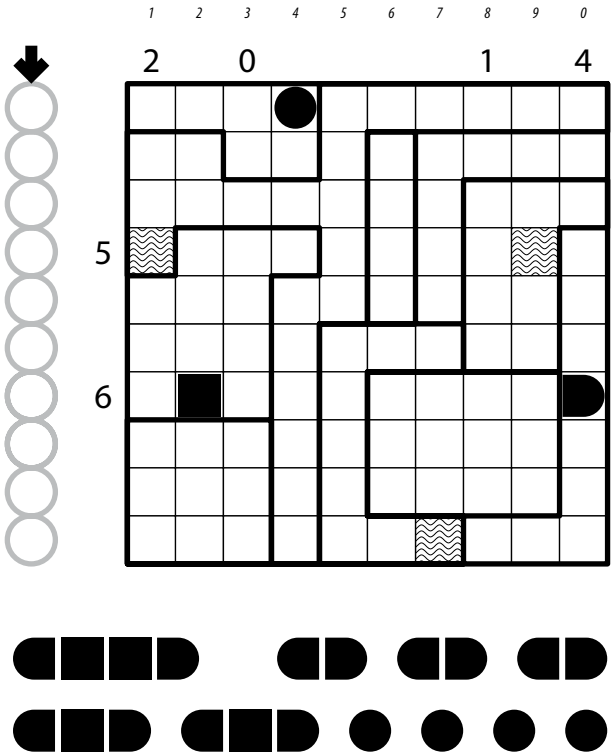
Each number to the top and left of the grid reveals the number of ship pieces that must be located in that row or column (including any that might be given for you).

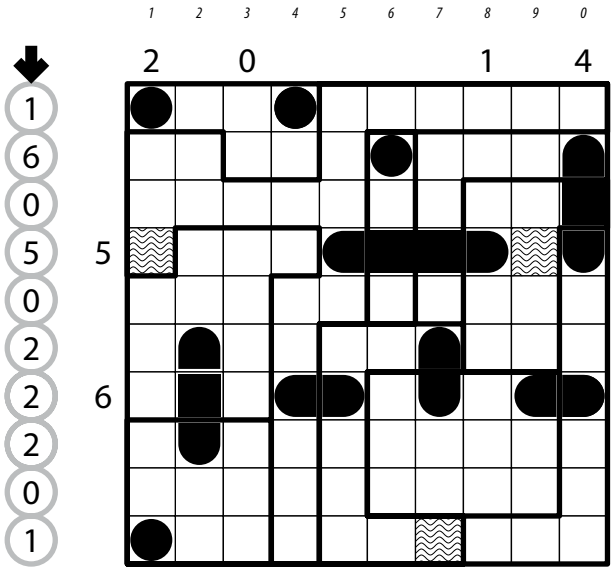
Each outlined region must contain exactly two ship pieces.

The numbers on the far 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 ship piece appears (the number on the far top of that column). Use only the last digit for two-digit numbers; e.g., use '0' if the first ship piece appears in column 10. If the row is empty, enter '0'.

Example Answer: 1605022201





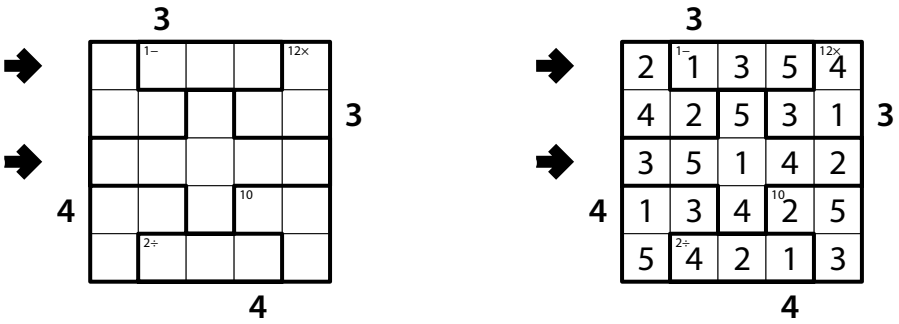
17. SkyTomTom [Thomas Snyder] (XX points)

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÷ as 4÷2÷1=2). The operation may or may not be given in the region, but at least one of the four operations must apply.

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.

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

Example Answer: `21354,35142`



18. Meandering Wordsearch [Serkan Yürekli] (XX points)

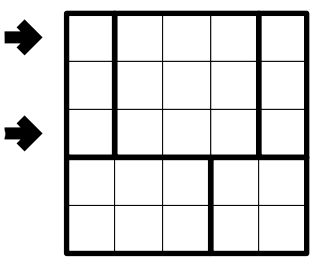
Place a letter into each empty cell so that each cell has exactly one letter and cells that contain the same letter do not touch each other along an edge or a corner. Each outlined area must contain the letters from one of the words in the word list such that consecutive letters in the word are orthogonally adjacent. (In other words, for each region it must be possible to draw a path that spells out the word, going through each cell exactly once.)

You may only use the same word in multiple regions if that word appears multiple times in the word list, and it may not be used in more regions than the number of times it appears in the list.

All words in the list not used to fill a region must appear in the grid along a line in one of the eight standard directions.

Answer: For each designated row, enter its contents.

Example Answer: `CEFGA,ACBIC`



A B C
A B C
C D I
A B C D
A H B F
D B D B
A B C D E F
A B C D E F G H I

