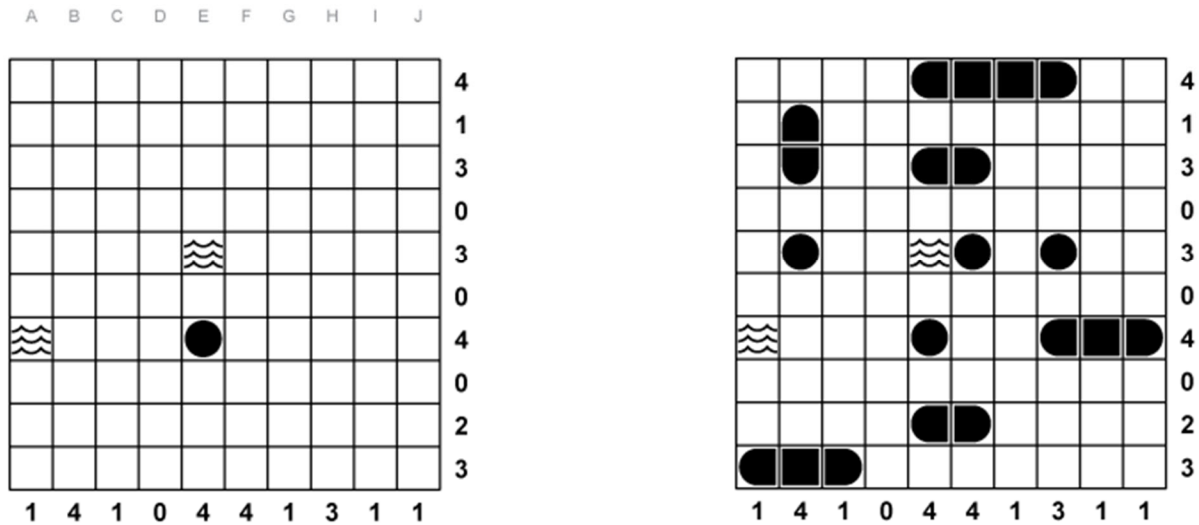


1. Battleships (Moshe Rubin) - 5 points

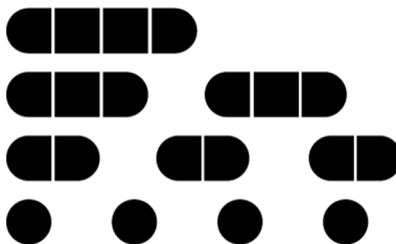
Locate the position of the 10-ship fleet in the grid. Each segment of a ship occupies a single cell. Ships are oriented either horizontally or vertically, cannot cover cells with water, and do not touch each other, not even diagonally. The numbers on the right and bottom edges of the grid reveal the total number of ship segments that appear in the corresponding row or column.

For solving, ignore the letters at the top of the grid.

Ex.



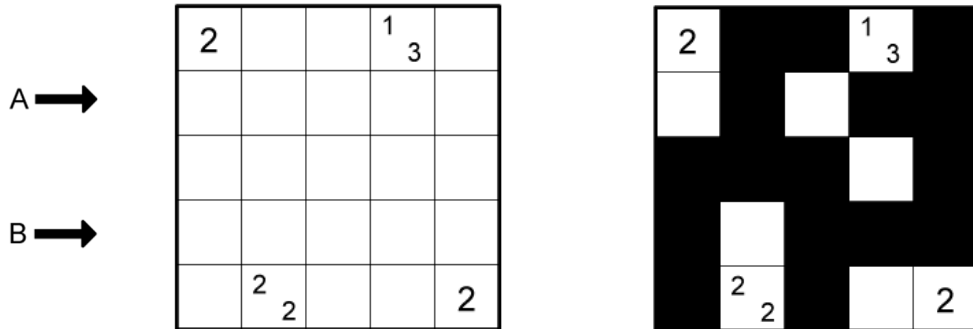
[diagram]



Answer: For each row, from top to bottom, enter the letter corresponding to the left-most column where a ship segment appears. Enter "X" for an empty row. (For the Example, the answer would be EBBXBXEXEA.)

2. Tapa (Serkan Yürekli) - 5 points

Paint some empty squares black to make a single network of paths, connecting squares vertically or horizontally, but never covering a 2x2 region. A square containing one or more numbers indicates the sizes of all groups of consecutively adjacent black squares, where multiple groups are separated by at least one white square and in no particular order.



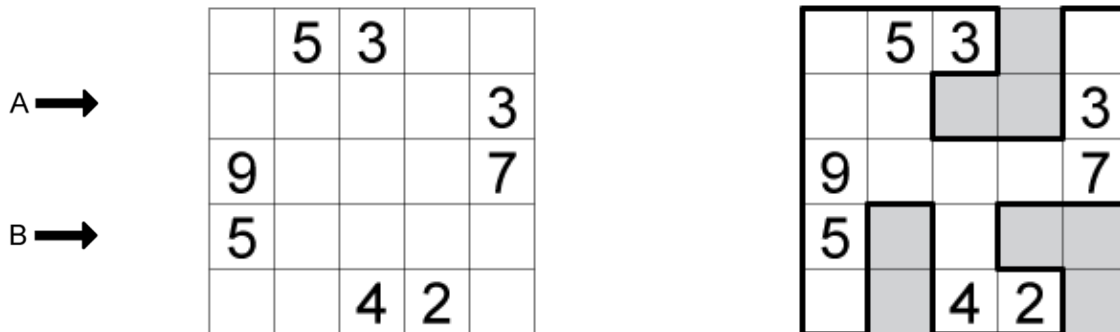
Ex.

[diagram]

Answer: For the indicated rows (2nd, 5th, and 10th), enter the widths of each group of black squares, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 12,13.)

3. Bag (Nikoli) - 10 points

Draw a bag (single closed loop) along the grid lines so that all the numbered squares are inside the bag. Additionally, each number equals the count of *interior* squares that are directly in line (horizontally and vertically) with that number's square, including the square itself.



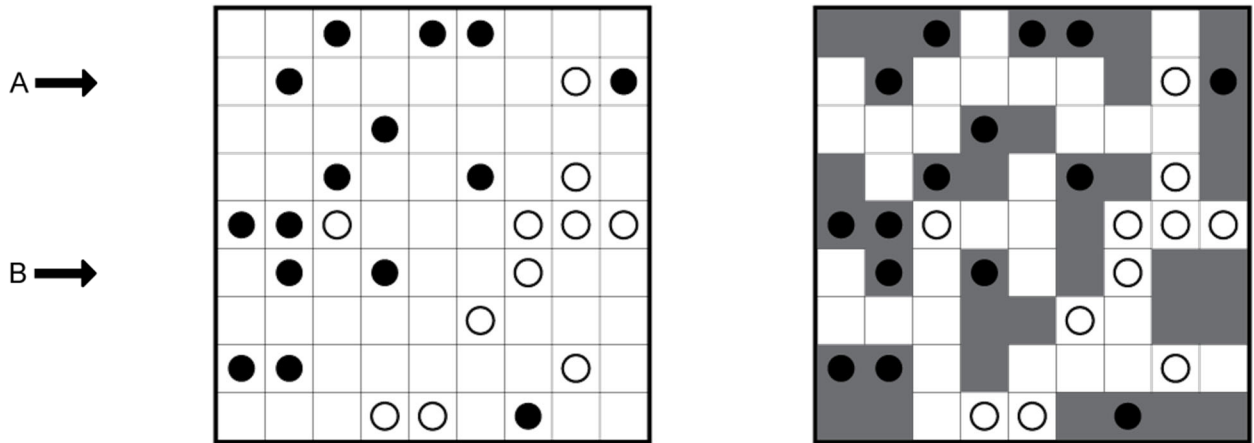
Ex.

[diagram]

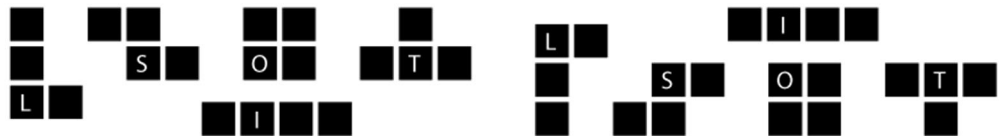
Answer: For the indicated rows (2nd, 6th, and 9th), enter the widths of each group of cells *inside* the bag, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 21,11.)

4. Statue Park (Jamie Hargrove) – 10 points

Place each of the given shapes once into the grid, with rotations and/or reflections allowed. No two shapes can overlap or share an edge, and all the space not occupied by the shapes must be connected. Black circles indicate cells that must be covered by a shape, and white circles indicate cells that cannot be covered.



Ex.



[diagram]
[shape inventory]

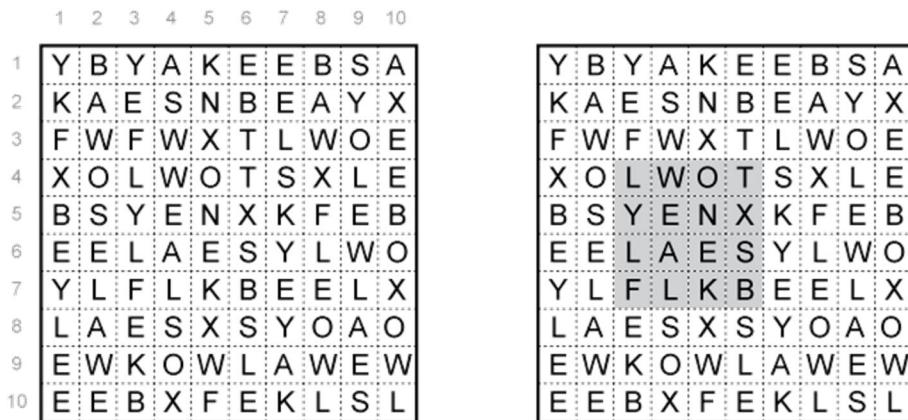
Answer: For the indicated rows (2nd, 6th, and 9th), enter the shape letters corresponding to each covered cell from left to right in the given rows. Separate each row by a comma or space. (For the Example, the answer would be TLI,STLOO.)

5. Block Search (Serkan Yürekli) – 5 points

Find a 4x4 area in the grid that contains all of the given words in a criss-cross (8 direction) arrangement.

Ex.

- ANT
- BEE
- EEL
- FLY
- OWL
- OX
- SEAL
- YAK



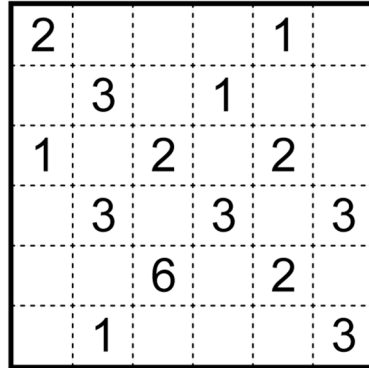
[word list] [diagram]

Answer: Enter the row,column coordinates of the upper-left corner of the 4x4 area. (For the Example, the answer would be 4,3.)

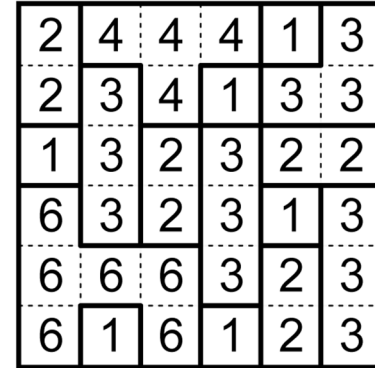
6. Fillomino (Jamie Hargrove) – 10 points

Divide the grid along the dotted lines into regions so that no two regions with the same area share an edge. Inside some cells are numbers; each number must represent the area of the region it belongs to. A region may contain zero, one, or more of the given numbers. (It is possible that some regions do not contain any of the given numbers.)

A →



B →



Ex.

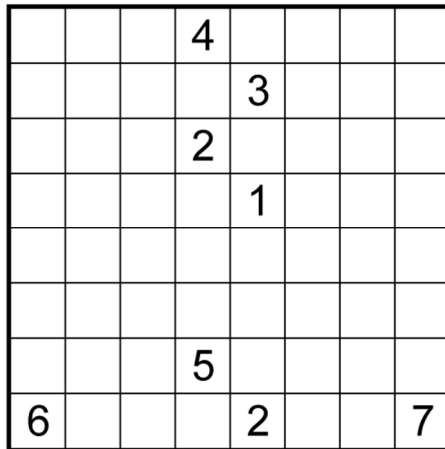
[diagram]

Answer: For the indicated rows (1st, 5th, 8th, and 11th), for each *regional segment* from left to right, enter the area of the corresponding region. For values greater than 9, enter only the rightmost digit. (For the Example, the answer would be 2413,616123.)

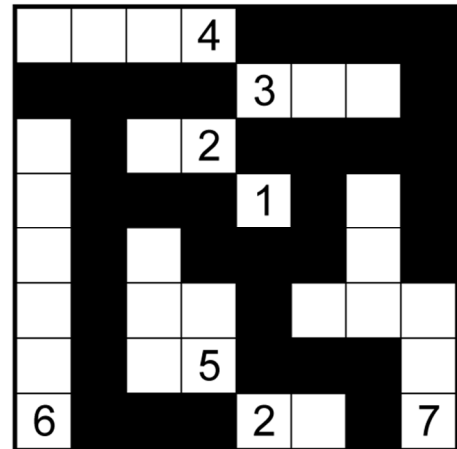
7. Nurikabe (Jamie Hargrove) – 10 points

Shade some empty cells black so that the grid is divided into white regions, each containing exactly one of the given numbers and with the same area as that number. No two white regions can touch along an edge. All black cells must be edge-connected, but no 2x2 group of cells can be entirely shaded black.

A →



B →



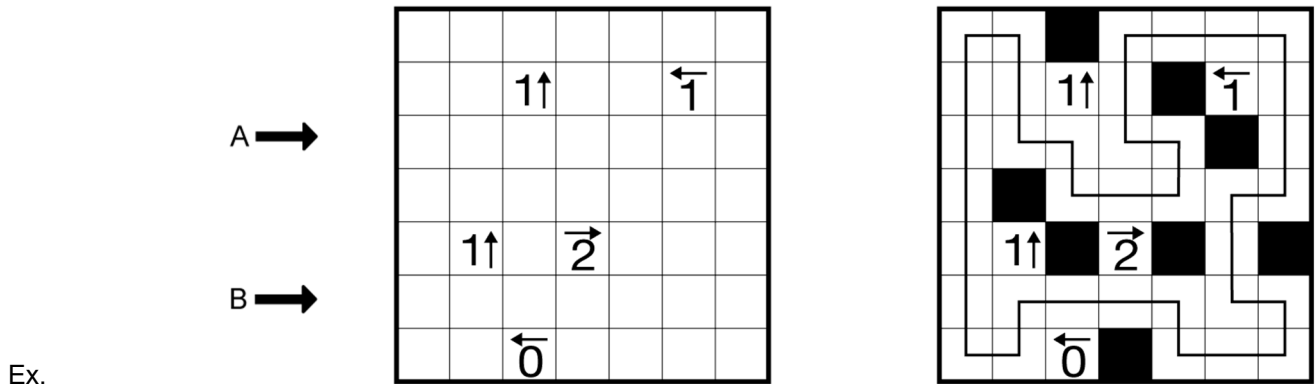
Ex.

[diagram]

Answer: For the indicated rows (3rd, 12th, and 17th), enter the lengths of the black segments from left to right. Separate each row by a comma or space. (For the Example, the answer would be 14,11.)

8. Yajilin (Nikoli) - 10 points

Shade some empty squares black so that every arrow points to the corresponding number of black squares. Black squares need not be pointed to, and cannot be adjacent horizontally or vertically. All remaining white space must be part of a single closed loop of squares connected horizontally or vertically.

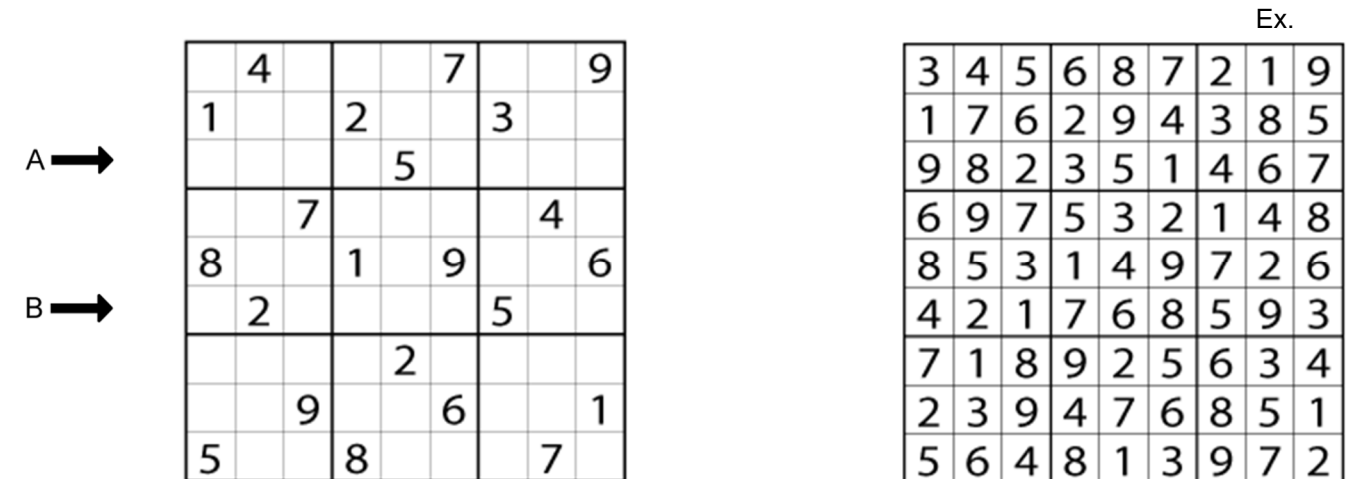


[diagram]

Answer: For the indicated rows (7th, 12th, and 18th), enter the lengths of the horizontal loop segments, from left to right. (For the Example, the answer would be 11,31.)

9. Sudoku (Nikoli) – 20 points

Place the digits 1 through 9 into the empty squares (one per square) so that each digit appears exactly once in each of the following regions: the nine rows, the nine columns, and the nine outlined 3x3 regions.

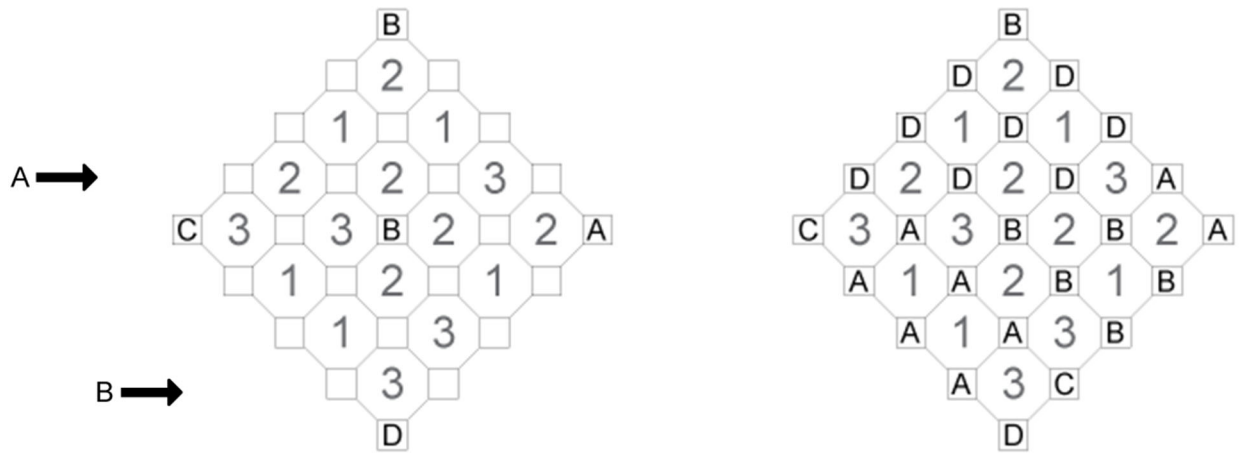


[diagram]

Answer: For the indicated rows (3rd and 5th), enter the digits from left to right. Separate each row by a comma or space. (For the Example, the answer would be 982351467,421768593.)

10. Network (Serkan Yürekli) – 10 points

Place one of the four given letters into each of the remaining empty squares. The numbered clues indicate the number of distinct letters in the four neighboring squares.



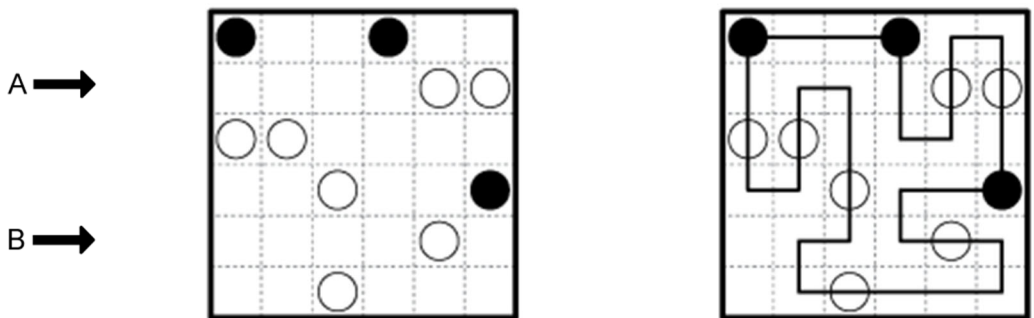
Ex.

[diagram]

Answer: For the indicated rows (4th and 8th), enter the letters from left to right. Separate each row by a comma or space. (For the Example, the answer would be DDDA,AC.)

11. Masyu (Nikoli) - 15 points

Find a single closed loop passing through each of the black and white circles. The loop passes through the centers of adjacent squares. When passing through a black circle, the loop must make a 90 degree turn and extend at least two squares in both directions. When passing through a white circle, the loop must go straight and must make a 90 degree turn in at least one of the adjacent squares.



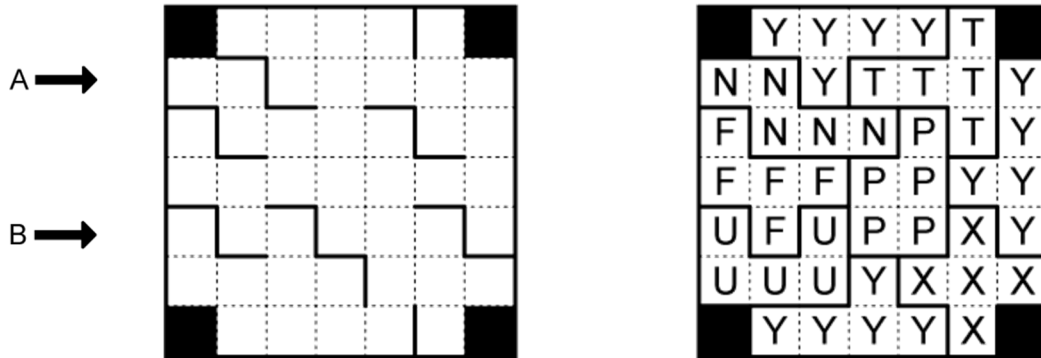
Ex.

[diagram]

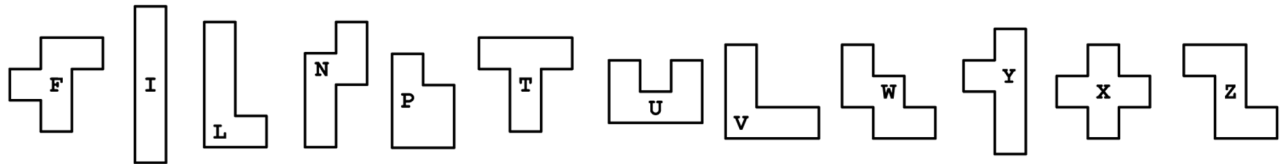
Answer: For the indicated rows (5th, 9th, 12th, and 15th), enter the lengths of the horizontal path line segments, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 1,12.)

12. Pentominous (Borders) (Serkan Yürekli) - 10 points

Divide the grid into pentominoes (five-cell regions) so that no two pentominoes of the same shape share an edge (rotations and reflections are considered the same shape). Some borders between pentominoes are already given; blackened cells are not part of any pentomino. An inventory of pentominoes is given below, but not all shapes are necessarily used.



Ex.



[diagram]

Answer: For the indicated rows (4th and 8th), enter letters corresponding to the pentomino *shape segments*, from left to right. Separate each row by a comma or space. (For the Example, the answer would be NYTY,UFUPXY.)

**13. Scorecards (Richard Hess) - 5 points each;
bonus: 15 points for solving all three**

For each of the three independent problems A-C, use each of the given digits (right of arrow) exactly once to create a mathematical expression resulting in the given value (left of arrow).

Operations are limited to addition ("+"), subtraction ("-"), multiplication ("x"), division ("/"), and exponentiation ("^"). Decimal points (".") may be used; digits may be combined to form multi-digit values; use minus sign ("-") to indicate negative values. Use parentheses if needed to disambiguate operator precedence.

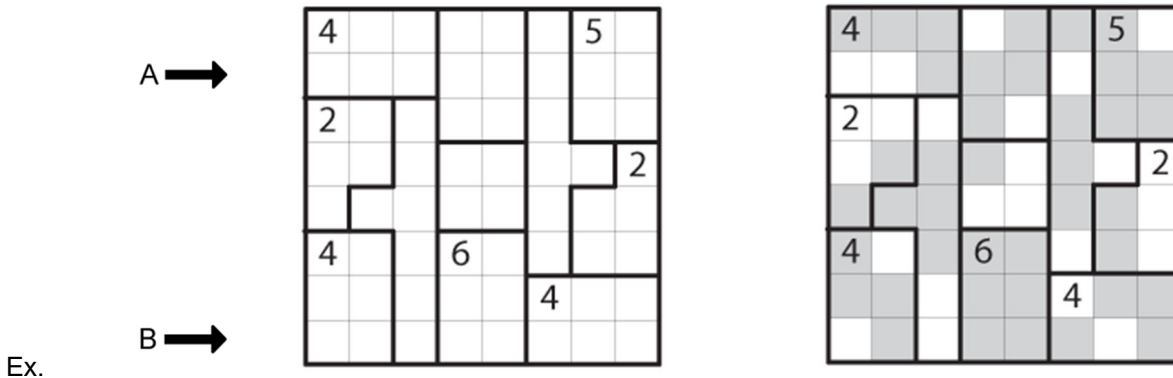
Ex.. $11 \leftarrow 5, 8, 9$ $8 + 9 \cdot 5 = 11$

[diagram A]
[diagram B]
[diagram C]

Answer: For each of the three problems, enter the expression. (For the example, the answer would be $8+9 \cdot 5$ or $9 \cdot 5+8$.)

14. Aqre (Eric Fox) - 15 points

Shade some cells so that all shaded cells form one orthogonally connected group (shading a numbered cell is permitted). Outlined regions with a number must contain the indicated number of shaded cells. There cannot be any groups of four or more horizontally or vertically consecutive white or shaded cells anywhere in the grid.



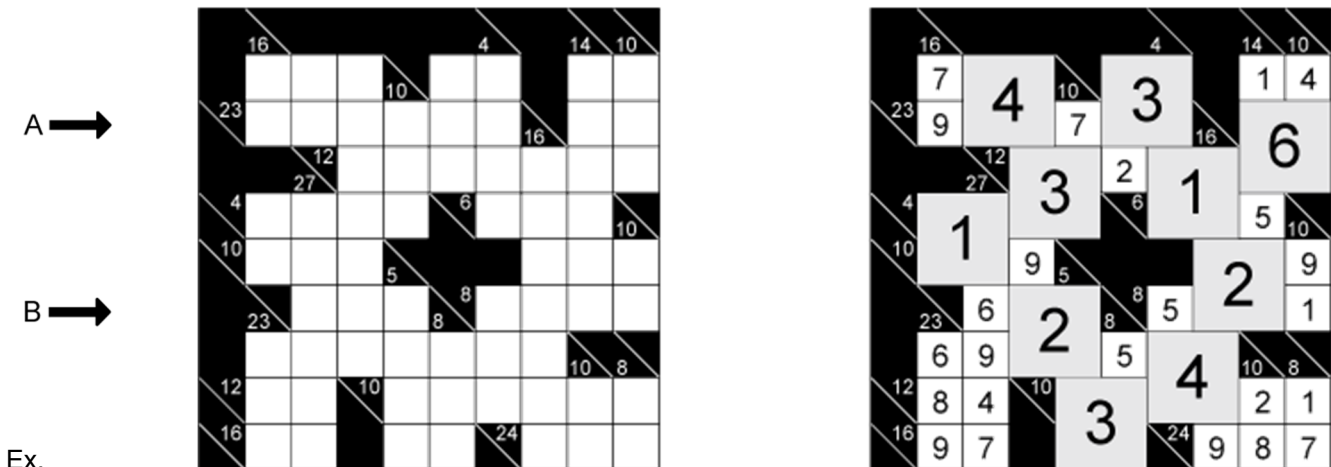
[diagram]

Answer: For the indicated rows (2nd, 5th, and 8th), enter the widths of each group of shaded squares, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 32,131.)

15. Double Kakuro (Invisible) (Grant Fikes) - 25 points

Enter a single digit from 1 to 9 into each empty square so that each clue number is the sum of the digits in the corresponding answer. (For the Down clues, the answer is the set of digits in the squares directly below the clue; for the Across clues, the answer is the set of digits in the squares directly to the right of the clue.) No digit is repeated within a single answer.

Additionally, some 2x2 white regions are to be shaded gray and treated as a single (2x2) cell for each of the corresponding two vertical and two horizontal clues (when given).



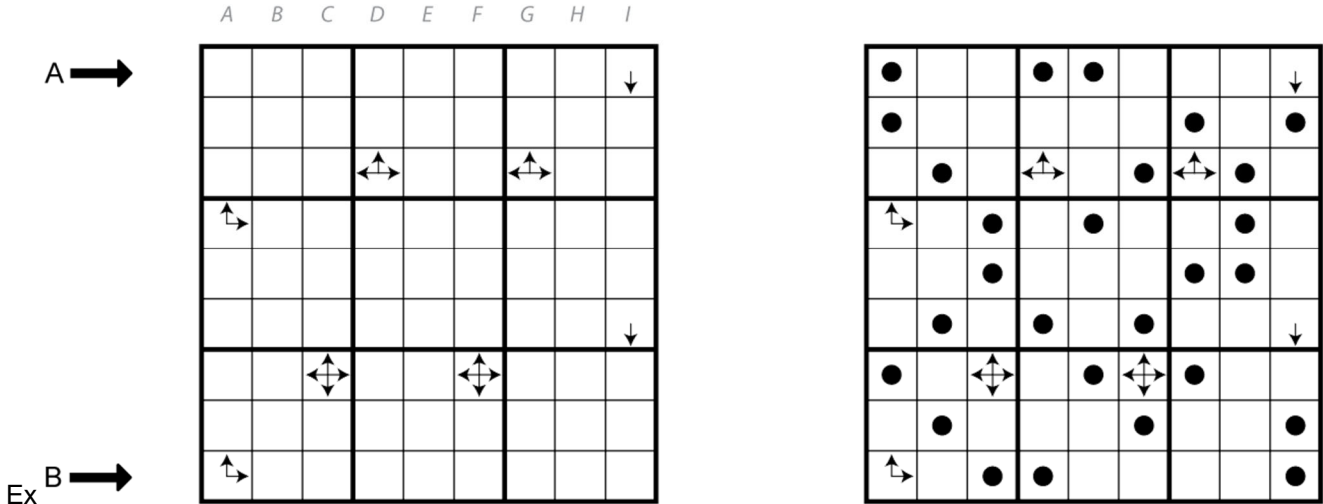
[diagram]

Answer: For the indicated rows (3rd, 6th, and 8th), enter the digits from left to right. Separate each row by a comma or space. (For the Example, the answer would be 94736,62521.)

16. Minedoku (Myopia) (JinHoo Ahn) - 25 points

Place a mine in some white cells so that four mines (three in the example) appear in each row, column, and outlined region. Additionally, the arrow clues indicate those orthogonal directions where the nearest mine(s) are located when looking from that square.

For solving, ignore the letters at the top of the grid.

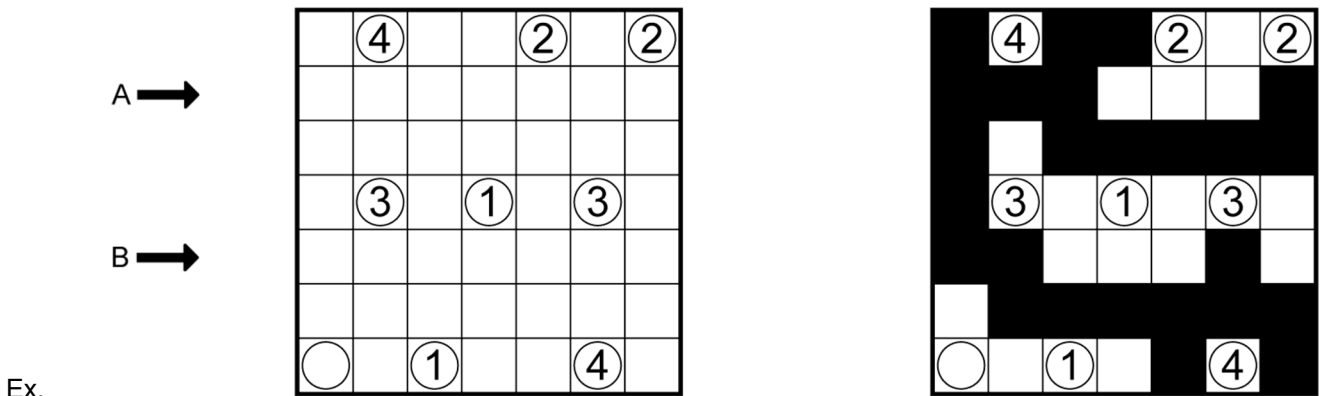


[diagram]

Answer: For the indicated rows (1st, 6th, 12th), enter the letters from left to right corresponding to the mines placed. Separate each row by a comma or space. (For the Example, the answer would be ADE,CDI.)

17. Canal View (David Altizio) - 20 points

Paint some empty squares black to make a single network of paths, connecting squares vertically or horizontally, but never covering a 2x2 region. Additionally, each number equals the count of *shaded* squares that are directly in line (vertically and horizontally) with that number's square.



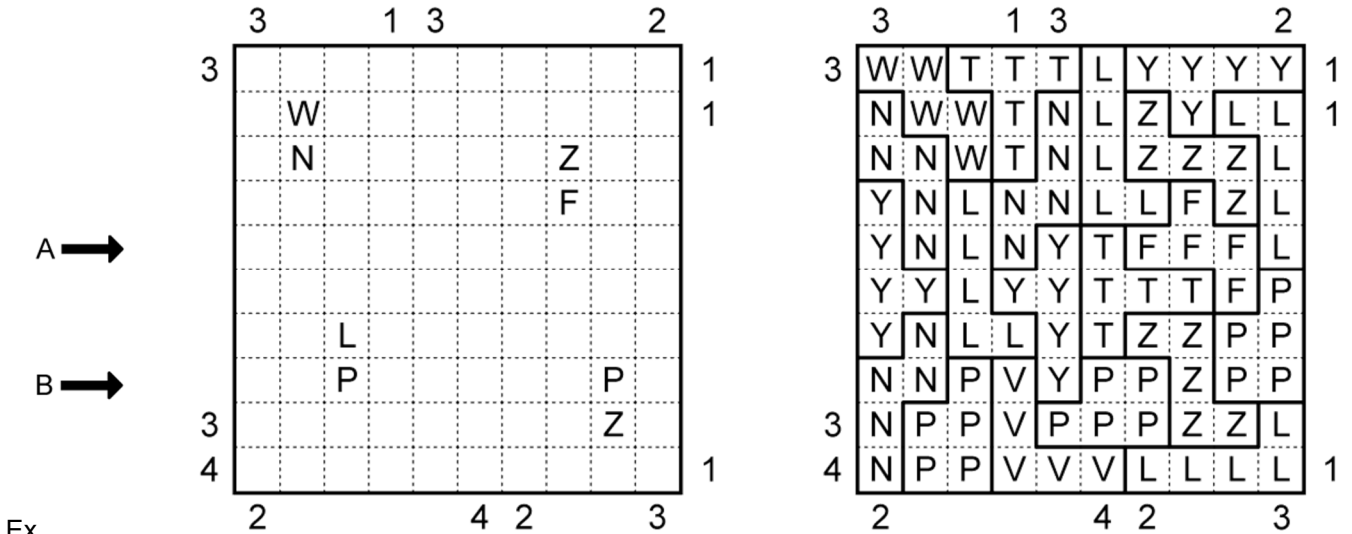
[diagram]

Answer: For the indicated rows (2nd, 7th, 14th), enter the widths of each group of black squares, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 31,21.)

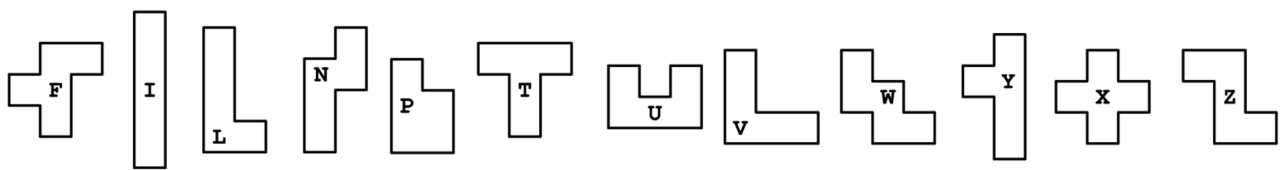
18. Pentominous (Skyscrapers) (Grant Fikes) - 35 points

Divide the grid into pentominoes (five-cell regions) so that no two pentominoes of the same shape share an edge (rotations and reflections are considered the same shape). A cell containing a given letter must be part of the pentomino shape associated with that letter. An inventory of pentominoes is given below, but not all shapes are necessarily used.

Additionally, numbers outside the grid show the number of separate pentomino segments *visible* in that direction. A segment of length N in a given direction is taken as a building of height N, and buildings of height N will block the view of all buildings behind them of equal or lesser height.



Ex.



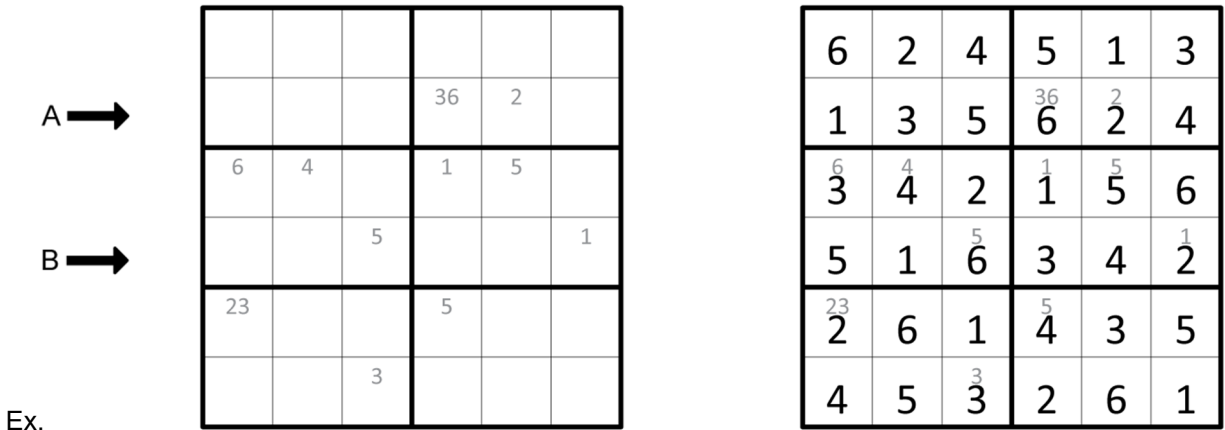
[diagram]

Answer: For the indicated rows (2nd, 7th, 14th), enter letters corresponding to the pentomino *shape segments*, from left to right. Separate each row by a comma or space. (For the Example, the answer would be YNLNYTFL,NPVYPZP.)

19. NonSudoku (Serkan Yürekli) – 30 points

Place the digits 1 through 9 into the empty squares (one per square) so that each digit appears exactly once in each of the following regions: the nine rows, the nine columns, and the nine outlined 3x3 regions. (The example below is a standard 6x6 Sudoku layout.)

Additionally, each small digit indicates that the digit *cannot* be placed in any of the *neighboring* cells, including diagonally adjacent cells.



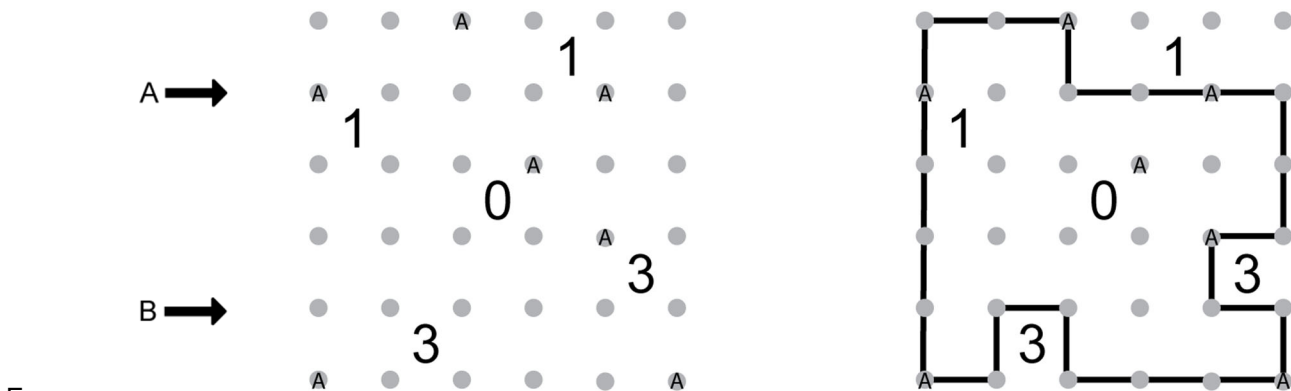
[diagram]

Answer: For the indicated rows (1st and 8th), enter the digits from left to right. Separate each row by a comma or space. (For the Example, the answer would be 135624,516342.)

20. Seven Star Fences (Adam R. Wood) - 25 points

Draw a single closed loop by connecting neighboring dots horizontally or vertically (but not diagonally). A numbered cell indicates how many of its edge segments are used by the loop.

Additionally, some dots will have letter clues; each letter will appear exactly seven times, and the loop's path through each of the seven instances must be different (including one case of "not passing through the dot").



[diagram]

Answer: For the indicated rows of dots (3rd, 6th, and 9th), enter the lengths of path segments, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 3,11.)

END OF TEST