WPF SUDOKU/PUZZLE GRAND PRIX 2019

ROUND 5

WPF PUZZLE GP 2019 COMPETITION BOOKLET

Host Country: Poland

Piotr Gdowski, Jan Mrozowski, Łukasz Bożykowski

Special Notes: Point values are final.

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1. Fuzuli [Piotr Gdowski] (27 points)

Place letters of the specified list into some cells, no more than one letter per cell, so that each letter appears exactly once in each row and column. No 2×2 group of cells can be entirely filled with letters.

Answer: For each designated row, enter its contents. Use 'X' for an empty cell.

Example Answer: CAXBX, XXBCA

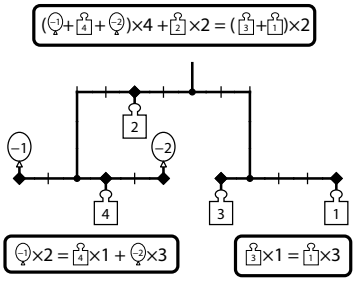
{A,B,C}

	B		A		C
➡	C	A		B	
		C		A	B
	A	B	C		
➡			B	C	A

{A,B,C,D,E}

				A	B			E
			C			D		
		E					B	
1a ➡	A							D
	B							A
1b ➡	C	D					A	
			B			C		
			A	B	C			

2-3. Balance [Jan Mrozowski] (6, 31 points)

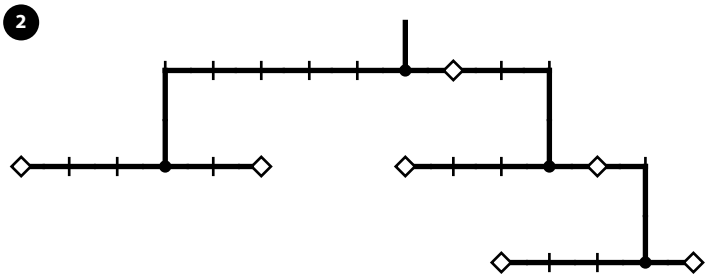


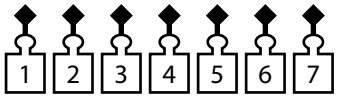
Attach the given weights (and balloons with negative weight, if given) to the mobile at the diamond-shaped attachment points, one at each point, such that the entire mobile balances — that is, at each fulcrum (round black dot), the total torque (weight multiplied by distance from the fulcrum) on both sides of the balance must be the same. Ignore any weight of the rods themselves. Weights (or balloons) may already be attached for you.

Answer: Enter the weight of each attached item, from left to right (ignore the vertical position of each item). Use only the last digit for two-digit or negative numbers; e.g., use '0' for a weight of 10 and use '3' for a weight of –3.

Example Answer: 142231

2





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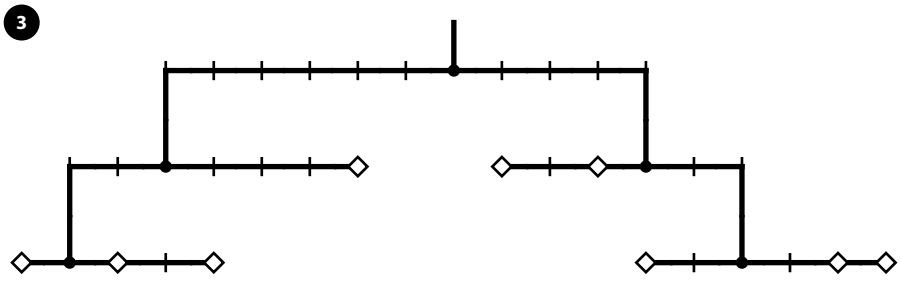
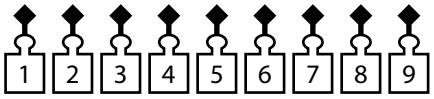




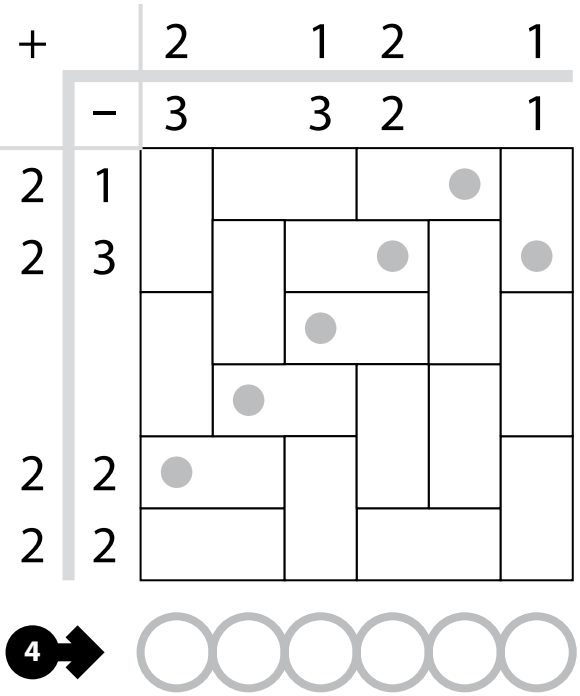
4-5. Magnets [Jan Mrozowski] (7, 36 points)

The grid is partitioned into regions of two square cells each (note that only region borders are drawn). Put "positive" (+) and "negative" (–) symbols into some cells, at most one symbol per cell, such that each region either has two symbols or no symbols at all. Adjacent cells (even within a region) cannot contain the same symbol.

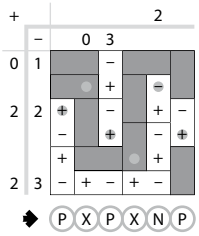
The numbers above and to the left of the grid indicate the exact number of symbols of the specified type that must be placed in each column or row, respectively. If a number is not given, there might be any number of symbols of the specified type.

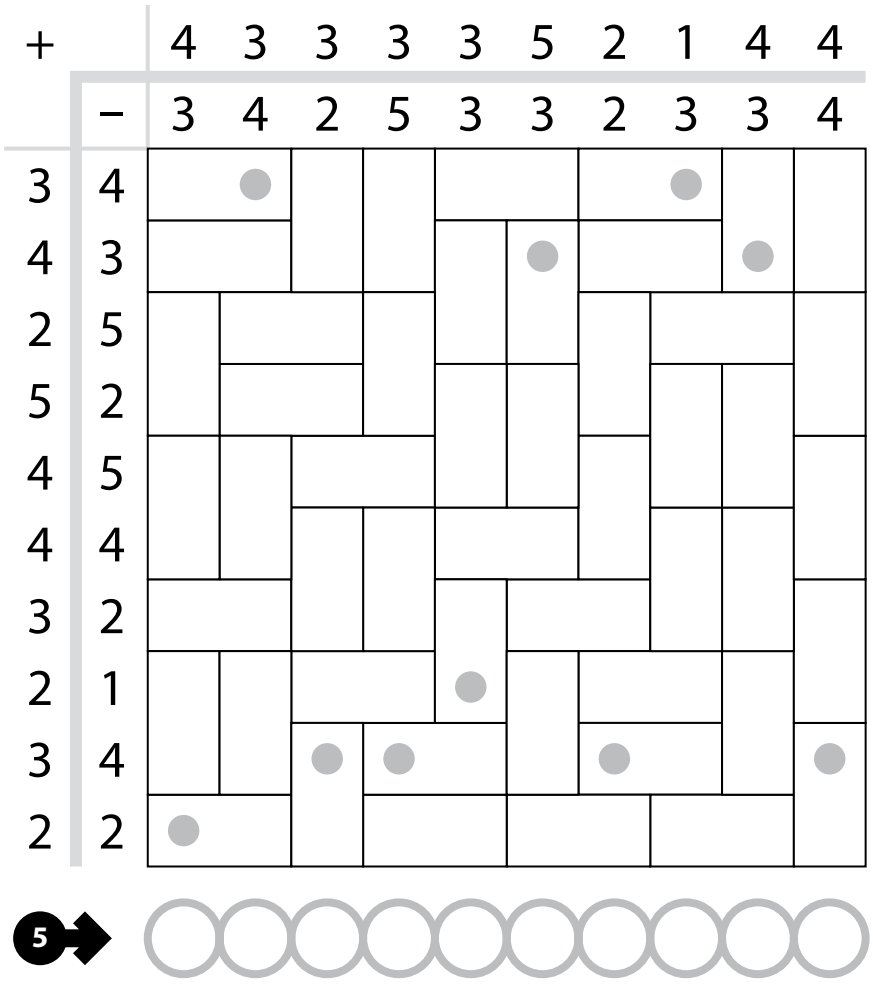
The dots in cells are only used for entering your answer.

Answer: Enter the contents of each dotted cell, reading the dots from left to right. (Ignore which row the dots are in.) Use 'P' for a "positive" (+) symbol, 'N' for a "negative" (–) symbol, and 'X' for an empty cell. Alternatively, you may use '+' for a positive symbol, '-' for a negative symbol, and 'X' for an empty cell, but do not mix the two systems!



Example Answer: `PXPXNP` (or `+X+X-+`)



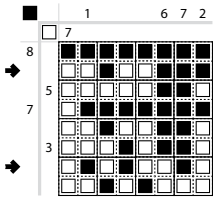


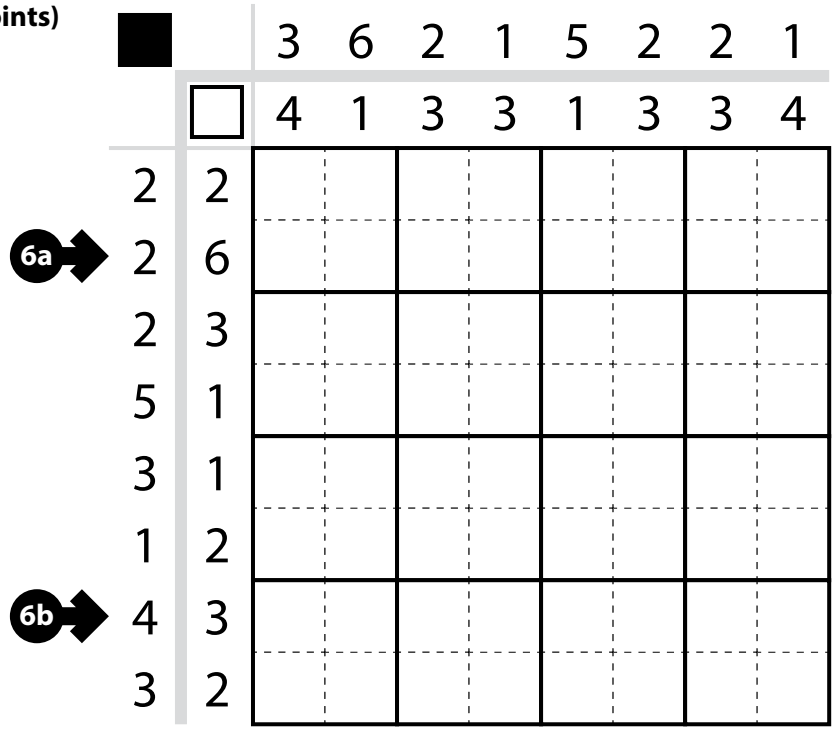
6. Binary Parquet [Łukasz Bożykowski] (39 points)

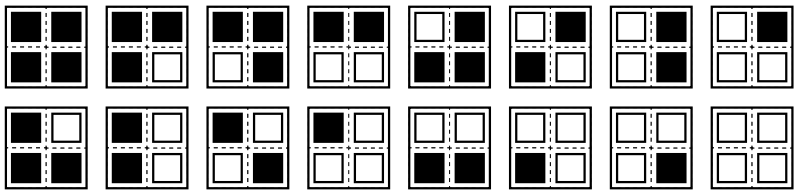
Place the sixteen 2×2 tiles into the grid. Each tile must be used exactly once. Tiles may not be rotated or reflected. Tiles may not overlap. The numbers above and to the left of the grid indicate the longest consecutive group of cells of the specified color that are in each column or row, respectively.

Answer: For each designated row, enter its contents from left to right. Use 'O' for an white cell and 'X' for a black cell. You may reverse the letters, as long as you are consistent.

Example Answer: `OOXOOXXX (or XXOXXOOO), OXOXOOXO (or XOXOXXOX)`





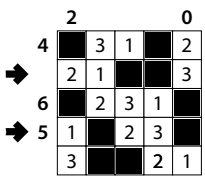


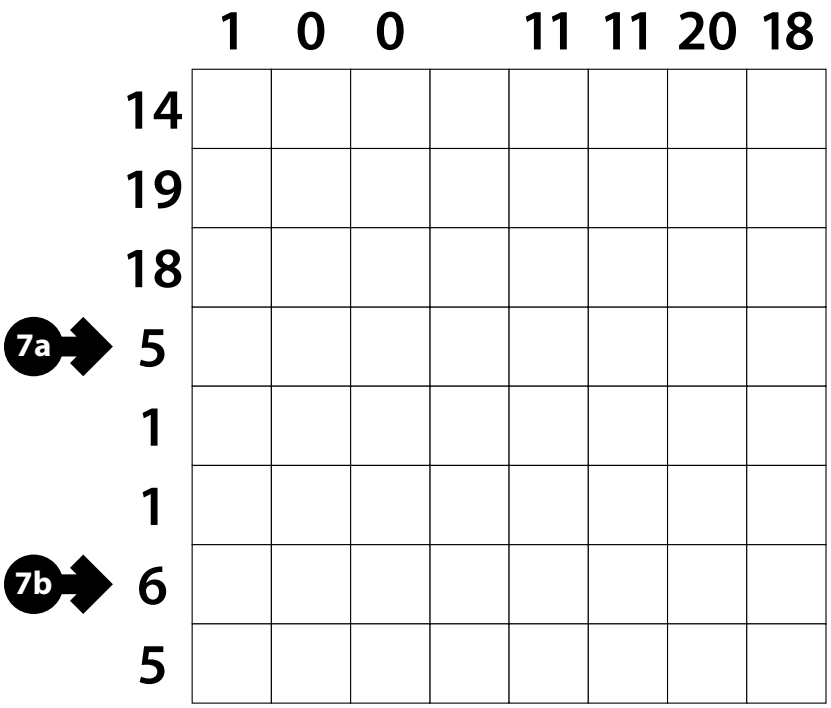
7. Doppelblock [Piotr Gdowski] (38 points)

Place either a block or a number from 1 to X (integers only) into each cell so that each number appears exactly once in each row and each column. (X is two fewer than the number of cells in each row.) Each row and each column will therefore have exactly two cells with blocks in them. The numbers outside the grid indicate the sum of the numbers between the two blocks in that row or column. Some cells may already be filled in for you.

Answer: For each designated row, enter its contents from left to right. Use 'X' to denote a block. Use only the last digit for two-digit numbers; e.g., use '0' for the number 10. Do not include any given numbers outside the grid.

Example Answer: `21XX3, 1X23X`





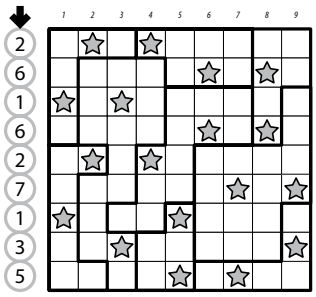
8-9. Star Battle [Jan Mrozowski] (43, 44 points)

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



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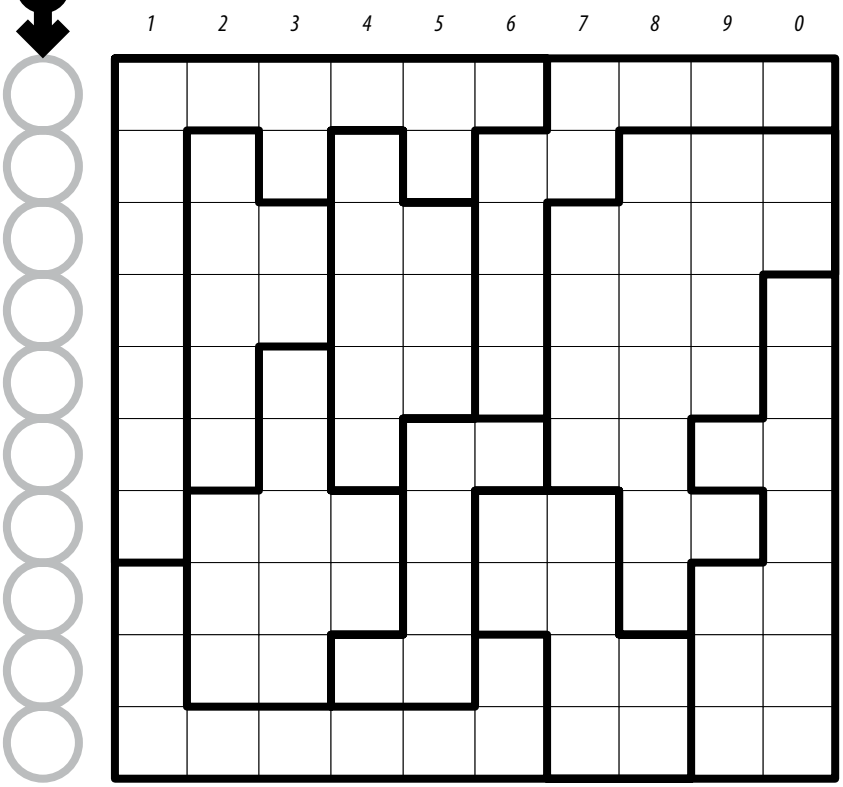

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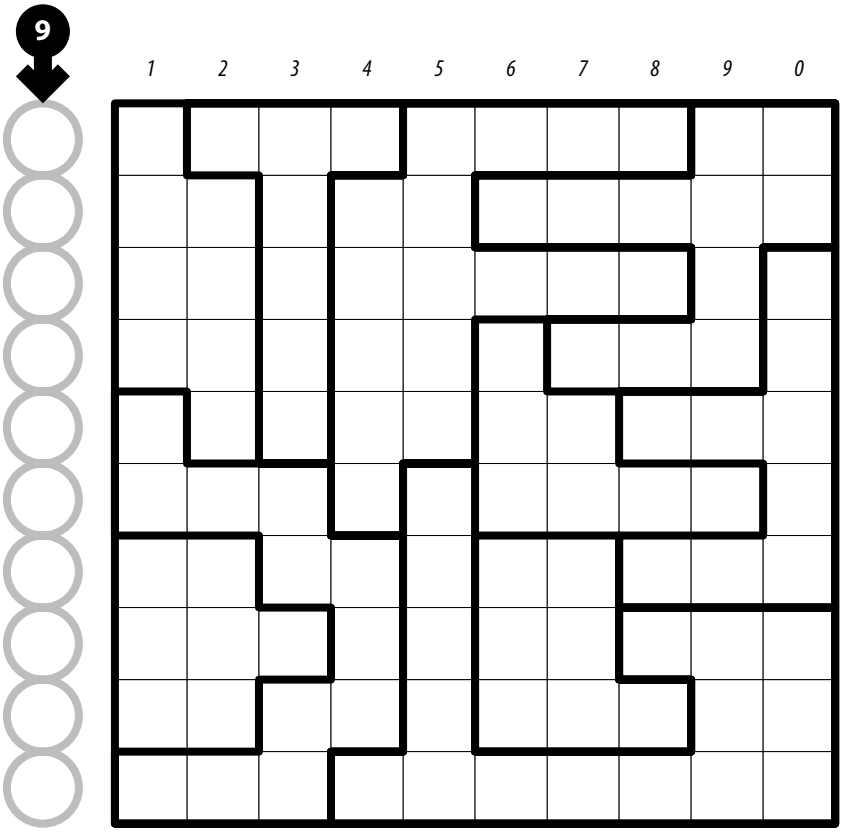
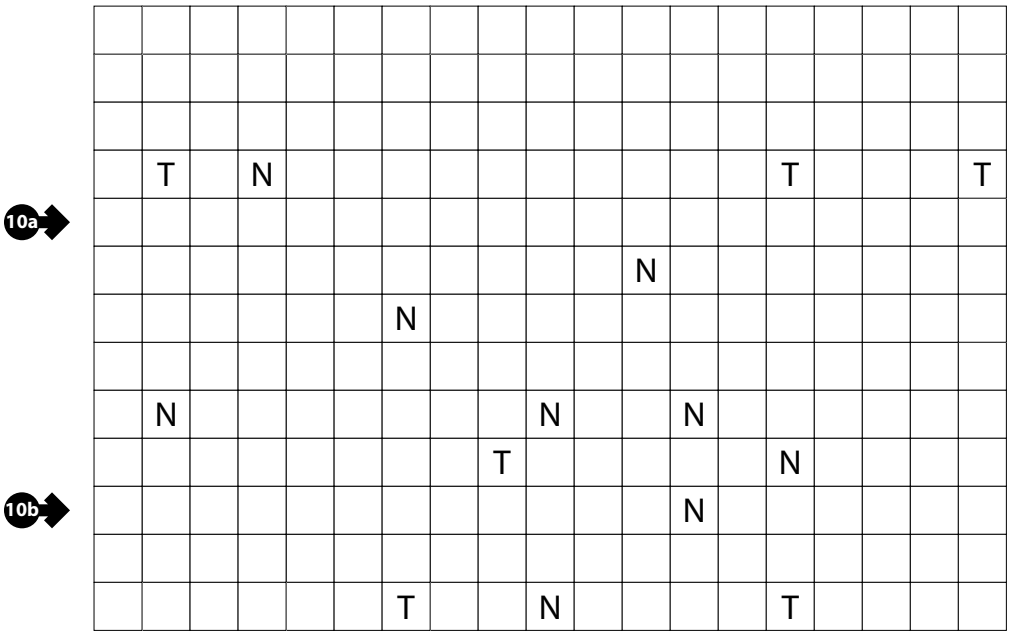


10. Scrabble (Letters) [Jan Mrozowski] (43 points)

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

	M								
	A		S		L				M
➡	C	Y	P	R	U	S			O
	E		A		X				L
	D		I	C	E	L	A	N	D
➡	O		N		M		U		O
	N				B		S		V
	I		C	R	O	A	T	I	A
➡	A				U		R		
		G	E	O	R	G	I	A	
➡					G		A		

LITS
CORAL
MASYU
NANRO
SNAKE
WALLS

ARROWS
SUGURU
ANGLERS
COMPASS
SHIKAKU
YAJILIN

FOOTBALL
HEYAWAKE
NURIKABE
FUTOSHIKI
DISSECTION
MASTERMIND
NUMBERLINK
SLITHERLINK
SKYSCRAPERS

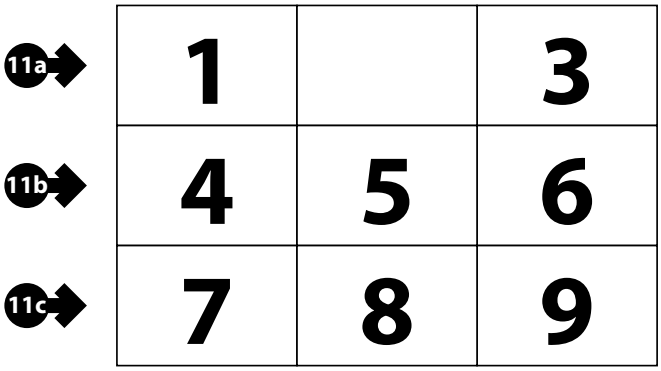
11. Hundred [Å ukasz BoÅ¼ykowski] (19 points)

Place digits into some (or all) cells such that the sum of numbers in each row and column is 100. Some digits are supplied for you; these digits are not necessarily aligned consistently with digits in other cells. Multi-digit numbers may not start with 0.

Answer: For each row, enter all the digits that were *not* supplied for you, from left to right. If all digits were supplied for you, enter a single letter 'X'.

Example Answer: 71,0,12

➡	76	8	16
➡	8	90	2
➡	16	2	82



12. Hitori [Jan Mrozowski] (52 points)

Remove some numbers from the grid so that all remaining numbers are connected orthogonally and no two removed numbers are adjacent orthogonally. Additionally, for each row and each column, the remaining numbers must be all different.

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

Answer: For each row from top to bottom, enter the number (on top) of the *second* column from the left that has a removed number. Use only the last digit for two-digit numbers; e.g., use '0' if the second removed number appears in column 10. If fewer than two of the numbers in the row are removed, enter '0'.

Example Answer: `40050`

	1	2	3	4	5
4	~~5~~	4	3	~~2~~	1
0	5	1	4	3	2
0	4	~~2~~	2	5	3
5	2	3	~~2~~	1	~~3~~
0	1	~~2~~	5	2	4

12

1	2	3	4	5	6	7	8	9	0
5	6	5	7	1	2	10	2	8	4
10	9	2	6	8	3	5	10	6	1
4	5	3	2	2	8	9	9	1	6
3	8	4	1	6	10	7	5	7	9
6	3	5	4	7	10	8	8	9	7
6	2	7	8	2	7	5	10	4	1
8	7	10	7	3	6	1	7	6	2
8	5	1	3	5	9	3	4	2	10
2	1	6	9	4	5	6	3	9	7
10	4	8	1	2	6	4	8	5	3

13. Capsules [Piotr Gdowski] (44 points)

Place a number into each empty cell, exactly one number per cell, so that each indicated region contains consecutive and different numbers, starting at 1. Adjacent cells (including diagonally-adjacent cells) must not contain the same digit.

The grid may have "holes" in it that are not cells and not part of any region.

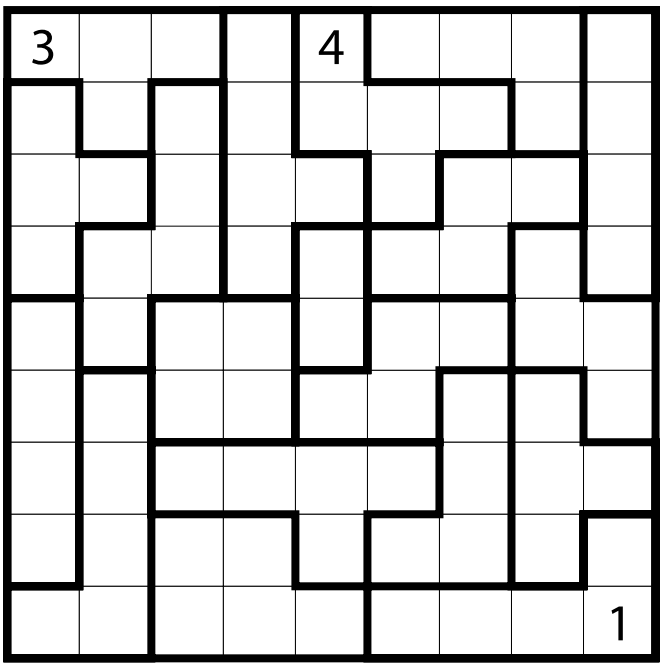
Answer: For each designated row, enter its contents. Skip over any holes. Use only the last digit for two-digit numbers; e.g., use '0' for the number 10.

Example Answer: `323532,12323`

	4	5	4	2	1	5
→	3	2	3	5	3	2
	5	4	1	4	1	4
→	1	2		3	2	3
	5	3	4	5	1	5
	1	2	1	2	4	3

13a

13b



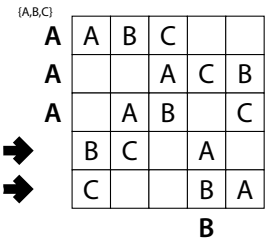
14. Easy As... (Fuzuli) [Piotr Gdowski] (47 points)

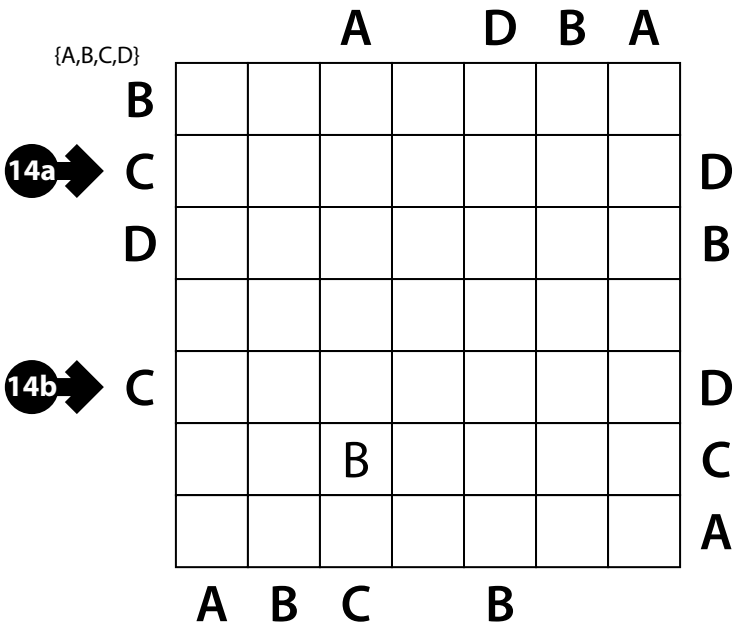
Place letters of the specified list into some cells, no more than one letter per cell, so that each letter appears exactly once in each row and column. The letters outside the grid indicate the first letter that can be seen in the respective row or column from the respective direction. Some letters may already be filled in for you.

No 2×2 group of cells can be entirely filled with letters.

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

Example Answer: BCXAX, CXXBA



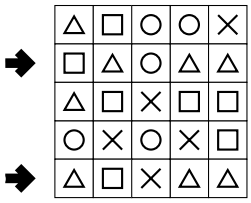


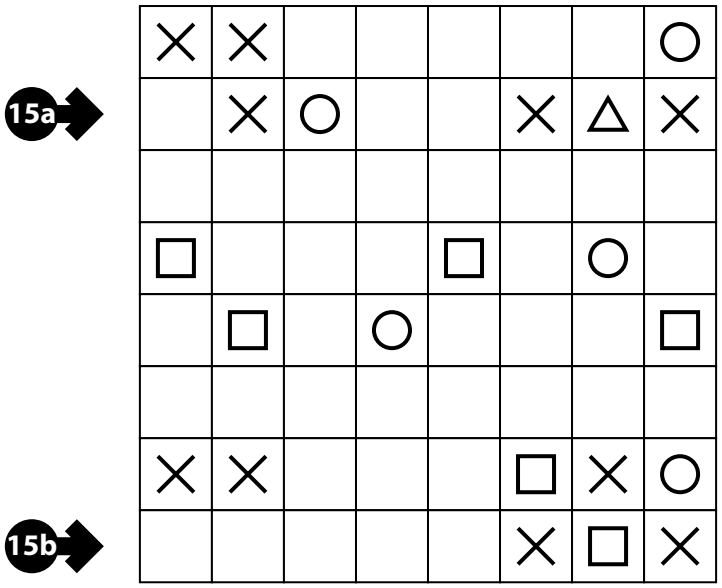
15. Dark Knightlines [Piotr Gdowski] (56 points)

Place one of the four given symbols into each cell such that no two cells connected by a chess knight's move contain the same symbol, and no three consecutive cells in any of the eight standard directions contain all the same symbol. Some symbols are already given for you.

Answer: For each designated row, enter its contents. Use '1' for the circle, '2' for the cross, '3' for the triangle, and '4' for the square.

Example Answer: 43133, 34233





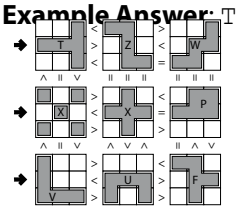
16. Pentomino Relations [Jan Mrozowski] (59 points)

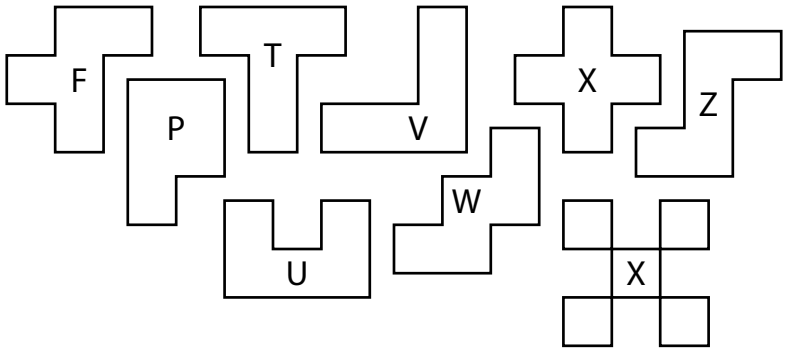
Place the nine supplied pentominoes into the nine grids. Each pentomino must be used exactly once. Pentominoes may not overlap; they may be rotated but **not** reflected. The relationship operators between the tiles describe the relationship betwen the number of cells occupied by pentominoes along that row (or column) on each side of the operator; for example, if each row segment next to an operator had two blackened cells, then the operator would be "=".

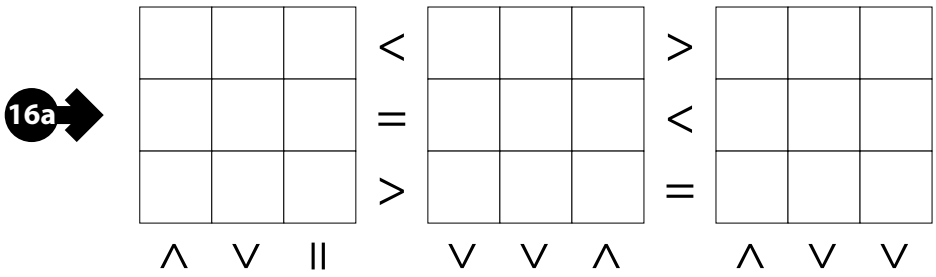
The letters on the tiles are for answer entry only. Note that there are two different pentominoes both labeled 'X'; one of them is not technically a pentomino but should be considered one for purposes of this puzzle.

Answer: For each designated row, enter the letters corresponding to its pentominoes, from left to right.

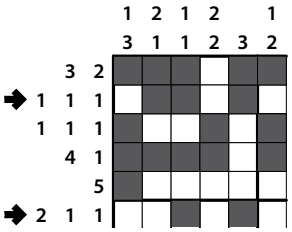
Example Answer: TZW,XXP,VUF







17. Paint by Numbers (Black or White) [Łukasz Bożykowski] (66 points)



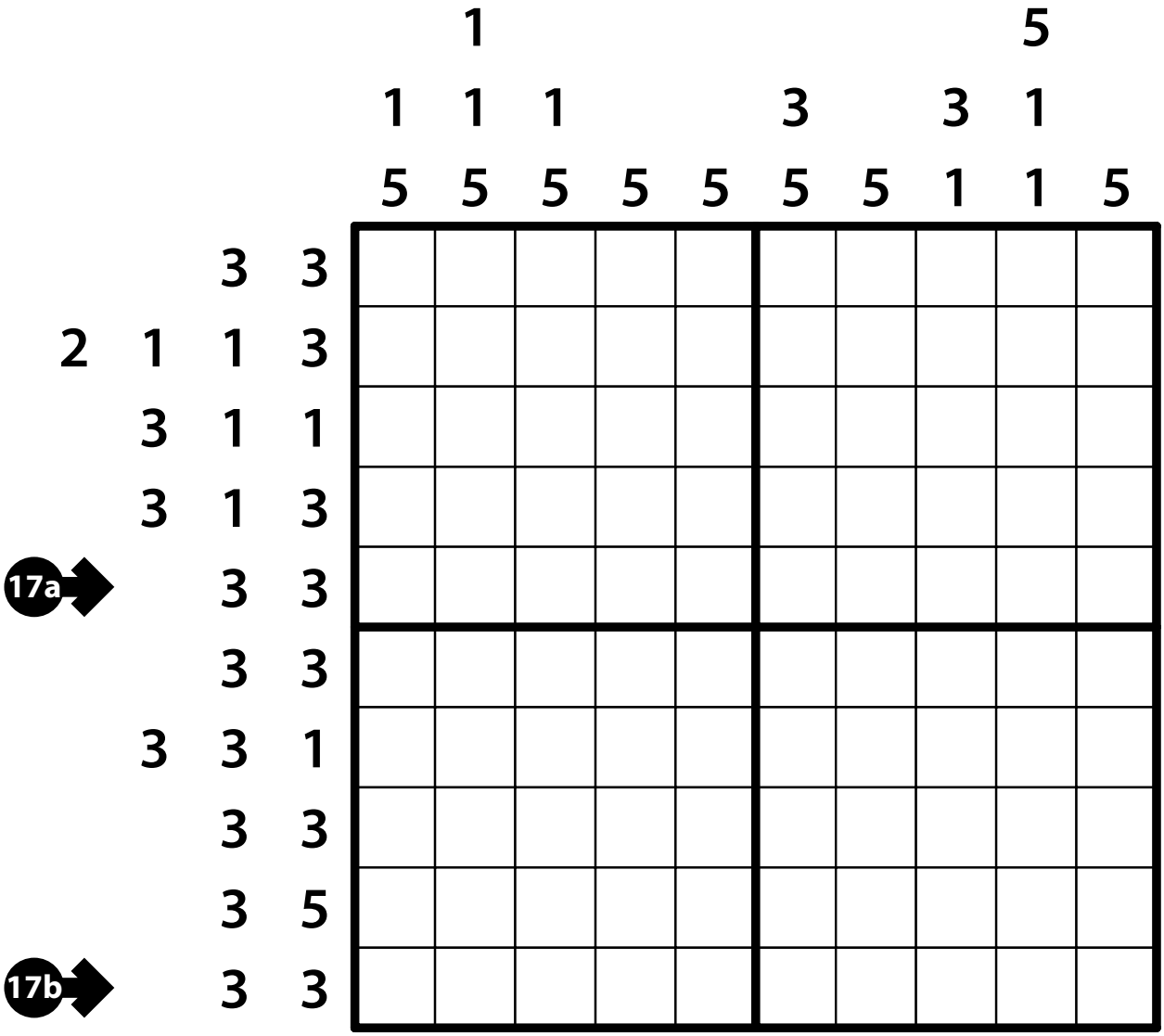
Blacken some cells in the grid such that the numbers to the left of (and above) the main grid represent the lengths of contiguous cell blocks in the corresponding row (or column). The lengths are given in order from left to right (or top to bottom), and cell blocks must contain at least one cell of the other color between them.

For each row (and column), the numbers might represent the lengths of black cells, or the lengths of white cells; it is your job to figure out which is which. (It is possible for the numbers to be consistent with the black cells and also be consistent with the white cells.)

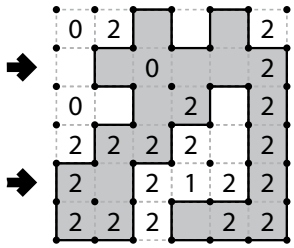
For your solving convenience, there is a thicker division line every five cells. These lines have no relevance to the puzzle.

Answer: For each designated row, enter its contents from left to right. Use 'O' for an white cell and 'X' for a black cell. Since a solution that reverses black and white is also correct, you may reverse the letters.

Example Answer: `OXXOXO (or XOOXOX), OOXOXO (or XXOXOX)`



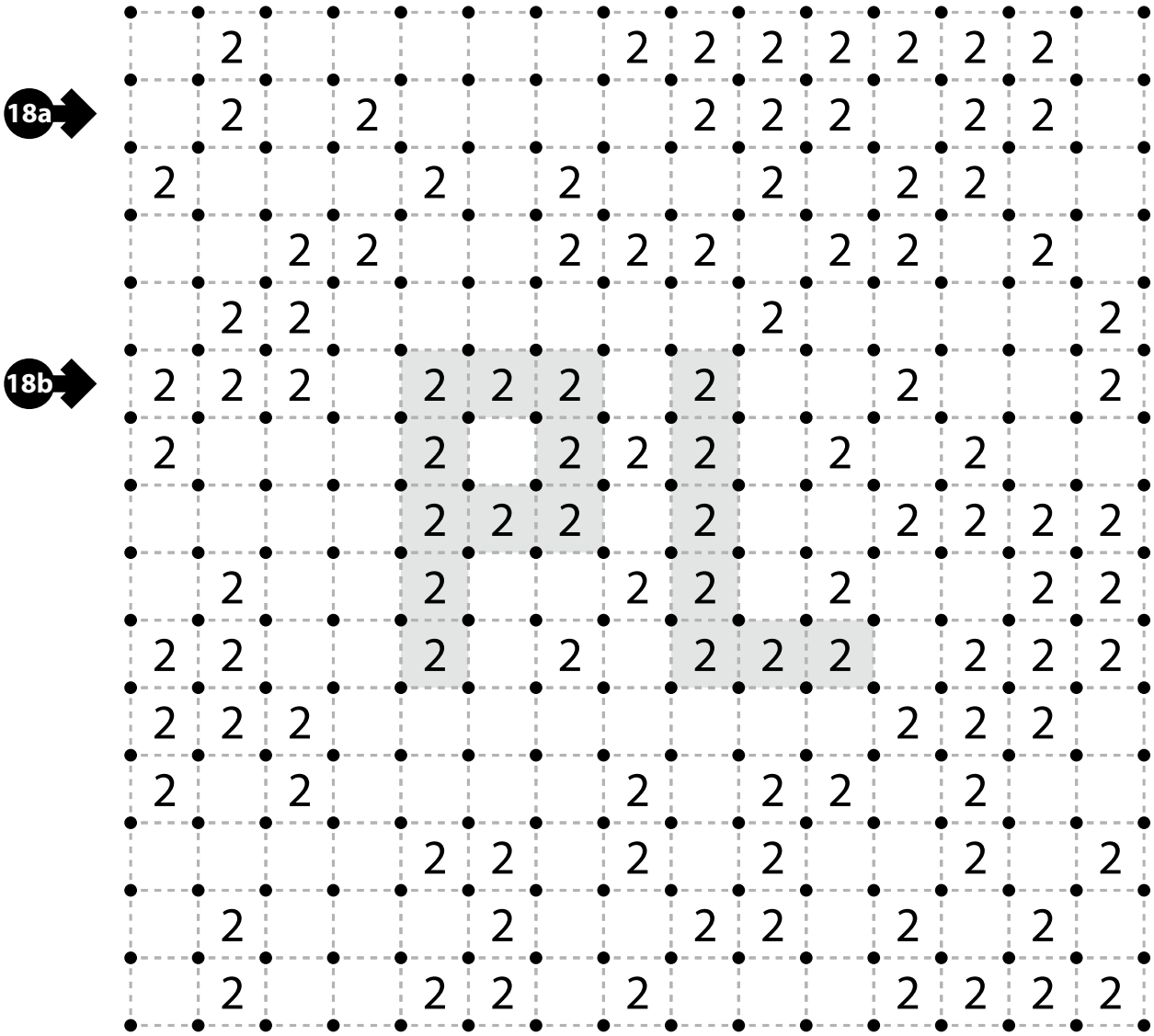
18. Slitherlink (Full Evens) [Łukasz Bożykowski] (110 points)



Draw a single, non-intersecting loop that only consists of line segments between the dots along the dotted lines. A number inside a cell indicates how many of the edges of that cell are part of the loop.

All possible even numbers (0s and 2s) are given.

Any coloring in the puzzle are purely for decorative purposes.

Answer: For each designated row, enter its contents from left-to-right. Use 'O' for a cell inside the loop and 'X' for a cell outside the loop. You may reverse the letters, as long as you are consistent.

Example Answer: `XOOOOO (or OXXXXX), OOXXXO (or XXOOOX)`