WPF SUDOKU/PUZZLE **GRAND PRIX** 2022

ROUND 3

WPF PUZZLE GP 2022 INSTRUCTION BOOKLET

Host Country: Serbia

Branko Ćeranić, Marko Tanasić, Nikola Živanović

Special Notes: Point values have not been finalized; will update closer to competition time.

Points:		
1.	**Slalom**	**13**
2.	**Shikaku**	**5**
3.	**Shikaku**	**13**
4.	**Star Battle**	**9**
5.	**Star Battle**	**12**
6.	**Satogaeri**	**14**
7.	**Satogaeri**	**15**
8.	**Sashigane**	**23**
9.	**Sashigane**	**20**
10.	**Sudoku (classic)**	**19**
11.	**Sudoku (Serbian Frame)**	**65**
12.	**ShakaShaka**	**24**
13.	**ShakaShaka**	**25**
14.	**Snake (length, ends)**	**21**
15.	**Starry Sky (one or more)**	**33**
16.	**Suguru**	**21**
17.	**Suguru**	**29**
18.	**Shape Division**	**25**
19.	**Spiral Galaxies**	**50**
20.	**Sombor**	**43**
21.	**Slitherlink**	**61**
22.	**Stostone**	**89**
23.	**Statue Park**	**92**
24.	**Scrabble**	**104**
TOTAL:		825

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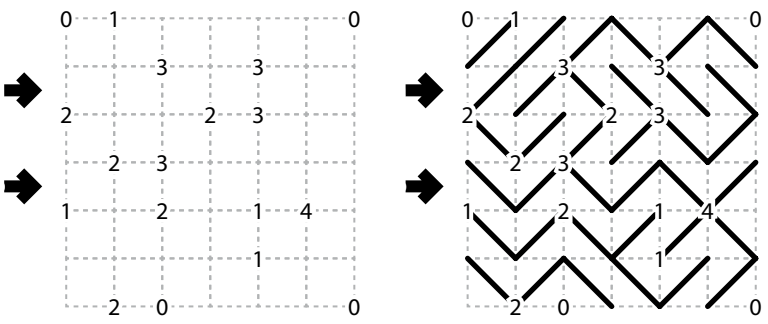
1. Slalom [Branko Ćeranić] (13 points)

In each cell, draw one of the two possible diagonals. All internal corners (where four cells meet) are connected to the outer edge of the grid through some drawn diagonals (in other words, do not draw any closed loop of diagonals). A number on a cell corner indicates how many drawn diagonals should directly touch that corner.



Answer: For each designated row, enter its contents from left-to-right. Use 'N' for a diagonal that connects upper-left to lower-right, and 'Z' for a diagonal that connects lower-left to upper-right. You may use any two distinct characters, as long as you are consistent.

Example Answer: ZZNNNN, NZNZNZ

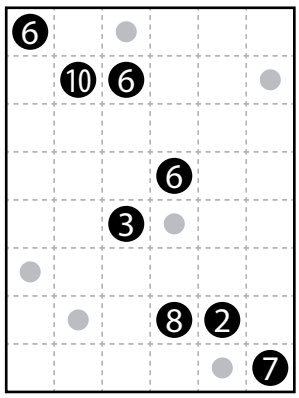
2-3. Shikaku [Marko Tanasić] (5, 13 points)

Divide the grid into rectangles along the grid lines such that each cell is in exactly one rectangle and each rectangle contains exactly one given number. The number must equal the area of the rectangle (in cells).

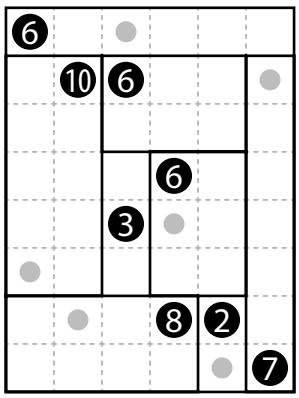
The dots in cells are only used for entering your answers.

Answer: Enter the number in the rectangle each dot is in, reading the dots from left to right. (Ignore which row the dots are in.) Use only the last digit for two-digit numbers; e.g., use '0' for a rectangle with a 10 inside it.

Example Answer: 086627



→ 0 8 6 6 2 7



→ 0 8 6 6 2 7

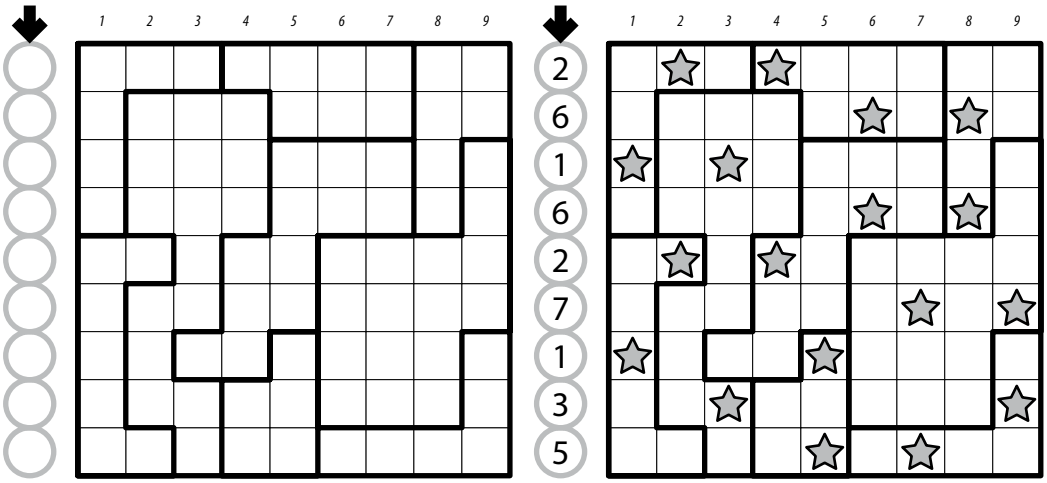
4-5. Star Battle [Marko Tanasić] (9, 12 points)

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 along an edge or a corner.

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



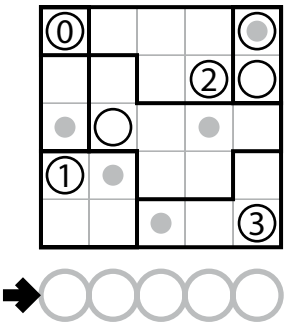
6-7. Satogaeri [Marko Tanasić] (14, 15 points)

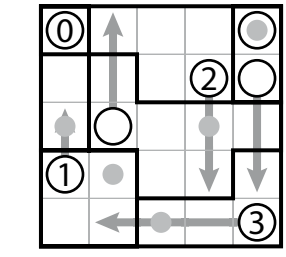
Move each circle orthogonally (without turning) to the center of a cell such that there is exactly one circle in each outlined region. It is permissible to move a circle zero cells (i.e., have it stay in the same cell). Every circle "uses" its starting cell, ending cell, and all cells in between; no cell is "used" in this way more than once. Some circles are labeled with numbers; the number indicates the distance (in cells) that circle must move (that is, one less than the number of cells it uses).

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

Answer: Enter the number for the cell each dot is in, reading the dots from left to right. (Ignore which row the dots are in.) The number for a cell is the number of cells moved by the circle that uses that cell, or '0' if no circle uses that cell. Use only the last digit for two-digit numbers; e.g., use '0' for a cell used by a circle that moves 10 cells.

Example Answer: 10320





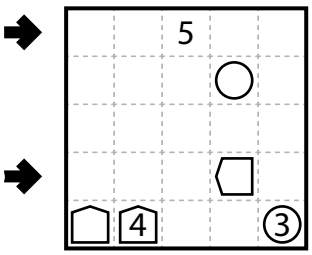
→ 1 0 3 2 0

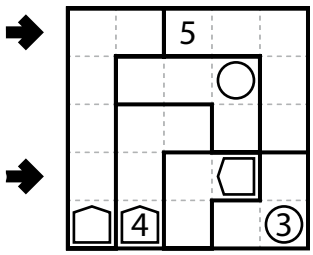
8-9. Sashigane [Nikola Živanović, Marko Tanasić] (23, 20 points)

Divide the grid into "L"-shaped regions along the grid lines. An "L"-shaped region includes one "pivot" cell and two "end" cells (all three must be distinct). Each end cell must be in the same row or column as the pivot, and all cells between the end and pivot along that row or column must be in the region. No other cells are allowed to be in the region. The two end cells cannot be in the same row or column. Some cells are marked with circles; those must be pivot cells. Some cells are marked with arrows; those must be end cells with the arrow pointing towards its pivot. Some cells have numbers in them; each such number indicates the area of its region.

Answer: For each designated row, enter the cell's number, from left to right. The number of a cell is the area of the region that cell is in. Use only the last digit for two-digit numbers; e.g., use '0' for a polyomino of size 10.

Example Answer: `66555,64333`





10. Sudoku (classic) [Nikola Živanović] (19 points)

Place a digit from 1-9 in each empty cell in the grid such that each row, column and marked 3×3 box contains each digit exactly once.

Answer: For each designated row, enter its contents.

Example Answer: `312485679,256849137`

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

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

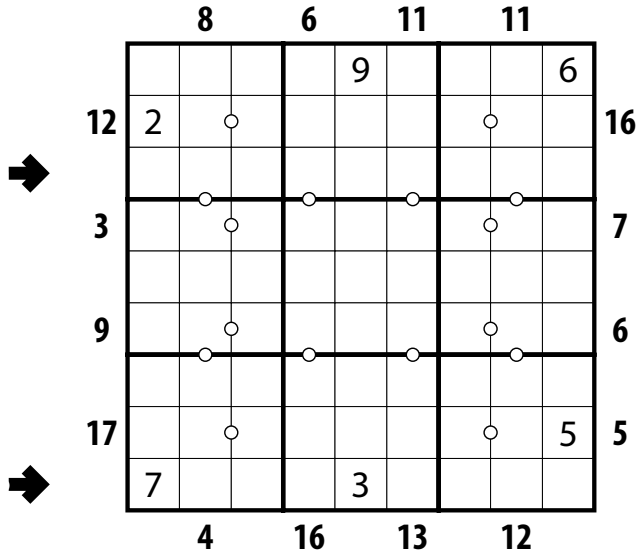
11. Sudoku (Serbian Frame) [Zoran Tanasić] (65 points)

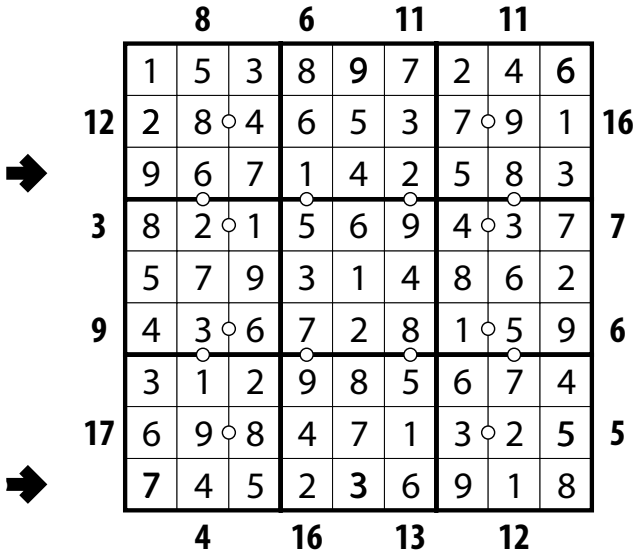
Place a digit from 1-9 in each empty cell in the grid such that each row, column and marked 3×3 box contains each digit exactly once.

Numbers on the left and right side of the grid indicate the sum of the second and third digits in that row from that direction. Numbers on the top and bottom side of the grid indicate the sum of the third and fourth digits in that row from that direction. (A dot has been drawn between the relevant cells for your convenience.)

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

Example Answer: `967142583,745236918`



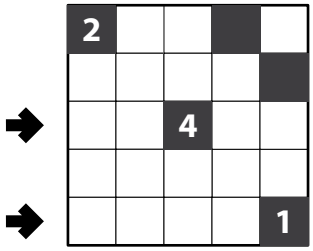


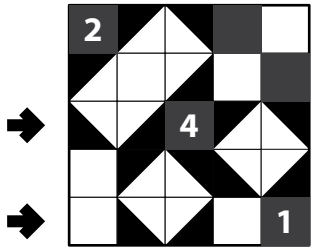
12-13. ShakaShaka [Nikola Živanović, Marko Tanasić] (24, 25 points)

Fill in some white cells with black triangles (no more than one black triangle per cell) so that all remaining white areas in the grid are composed of rectangles. (All squares are rectangles.) Each black triangle occupies exactly half of its cell (and may touch other black triangles in other cells). A white rectangle may occupy multiple cells but may not share part of an edge with another white rectangle (it is permissible for a corner of a white rectangle to touch an edge or a corner of another white rectangle). Some black cells contain numbers; those cells must touch that number of black triangles along an edge.

Answer: For each indicated row, enter its contents from left to right. Use '`N`' for a cell with a triangle shaded in the lower-left or upper-right, '`Z`' for a cell with a triangle shaded in the upper-left or lower-right, and '`O`' for a cell without a triangle. You may any three characters, as long as you are consistent.

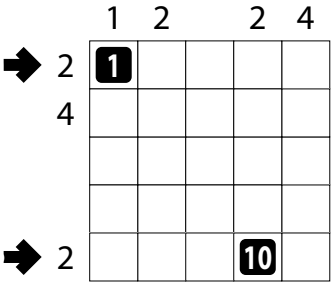
Example Answer: `NZOZN,ONZOO`



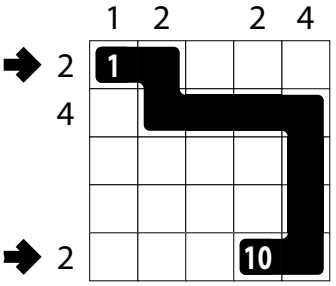


14. Snake (length, ends) [Nikola Živanović] (21 points)

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.



The snake must occupy exactly 45 cells (10 cells in the example puzzle). The two ends of the snake are given.

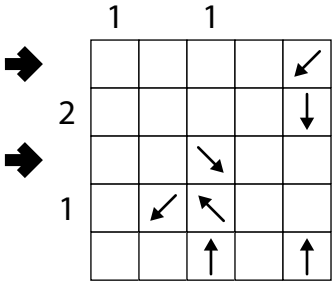


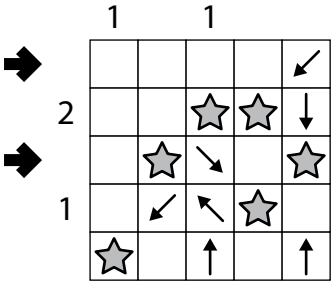
Answer: For each designated row, enter its contents. Use `O` for a cell occupied by the snake and `X` for a cell not occupied by the snake. You may use any two distinct characters, as long as you are consistent.

Example Answer: `OOXXX`, `XXXOO`

15. Starry Sky (one or more) [Branko Ćeranić] (33 points)

Add stars into empty cells such that each arrow is pointing toward one or more stars, and each star is pointed to by one or more arrows. Numbers above and to the left of the grid indicate the number of stars in that row or column, respectively.



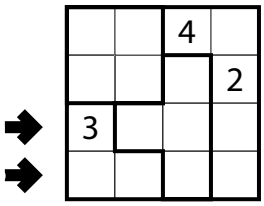


Answer: For each designated row, enter its contents, from left to right. Use '`O`' for a cell with a star and '`X`' for a cell without a star. You may use any two distinct characters, as long as you are consistent.

Example Answer: `XXXXX`, `XOXXO`

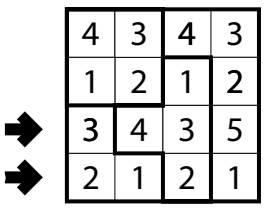
16-17. Suguru [Branko Ćeranić] (21, 29 points)

Place a number into each cell so that each bold region contains the numbers from 1 to *N*, where *N* is the number of cells in the region. Cells containing the same number must not touch along an edge or a corner. Some numbers may be already filled in the grid.



Answer: For each designated row, enter its contents (including any given numbers).

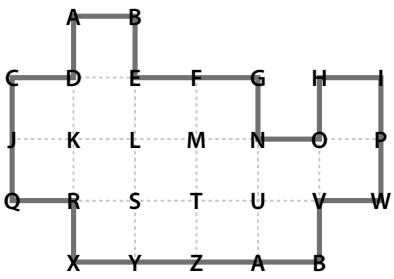
Example Answer: `3435`, `2121`

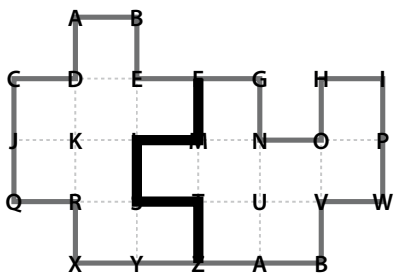


18. Shape Division [Nikola Živanović] (25 points)

Divide the shape into two congruent parts along the grid lines. (Congruent parts have the same shape and size but may be rotated and/or reflected.)

The letters on the grid are only for entering your answer.





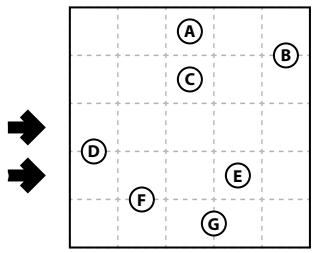
Answer: All the letters on your added division border (starting from either end of the line).

Example Answer: `FMLSTZ` or `ZTSLMF`

19. Spiral Galaxies [Nikola Živanović] (50 points)

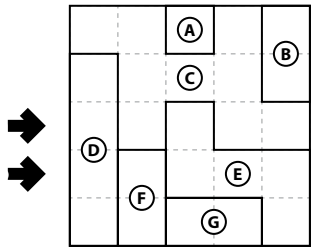
Divide the grid into polyomino-shaped regions such that each cell is in exactly one region. You may only draw on the grid, as indicated by the dotted lines. Each region must be rotationally symmetric and contain exactly one circle at the point of symmetry.

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.

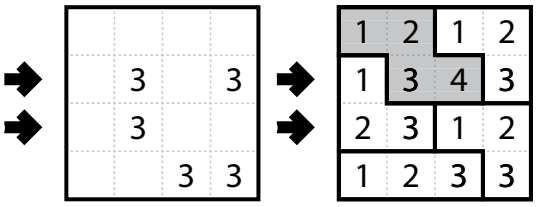
Example Answer: `DCECC,DFEEE`



20. Sombor [Nikola Živanović] (43 points)

Divide the grid into regions of size 3 or 4. Within each region, put different numbers 1, 2, 3 (and 4 if the region is of size 4) in top-to-bottom, left-to-right order (that is, numbers in higher rows are smaller, and within a row numbers to the left are smaller). Regions of size 4 cannot share an edge or a corner. The locations of all the 3s are given.

Regions of size 4 are shaded in the solution, but this has no effect on the puzzle.

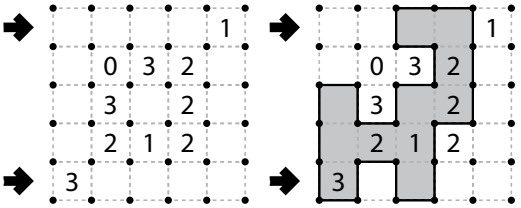


Answer: For each designated row, enter its contents from left to right.

Example Answer: `1343,2312`

21. Slitherlink [Marko Tanasić] (61 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.

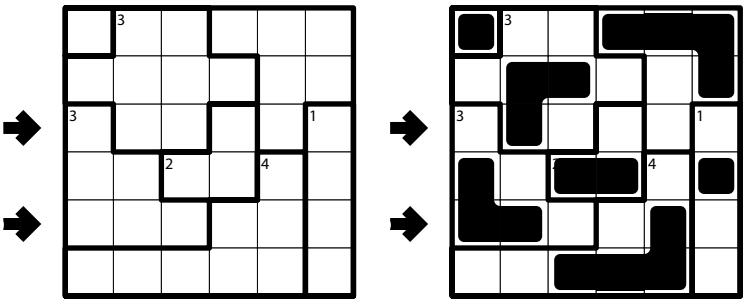


Answer: For each designated row, enter its contents from left-to-right. Use '`O`' for a cell inside the loop and '`X`' for a cell outside the loop. You may use two other characters, as long as they are distinct.

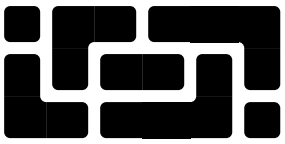
Example Answer: `XXOOX,OXOXX`

22. Stostone [Nikola Živanović] (89 points)

Shade some cells such that every region has exactly one polyomino (a group of orthogonally connected shaded cells). If two cells that touch along an edge belong to different regions, then at least one of the two cells must be unshaded. The shading must be such that if all the polyominoes move as far downward as they can without intersecting another polyomino, the bottom half of the grid will be shaded and the top half of the grid will be unshaded. If a region contains a number, that number must be the area of the polyomino in that region. (The location of the number within the region has no relevance to the puzzle.)



The example solution shows separately what the polyominoes would look like when moved downward; it does not need to be shown as part of your solution.



Answer: For each designated row, enter its contents. Use `O` for a shaded cell and `X` for a that is not shaded. You may use any two distinct characters, as long as you are consistent.

Example Answer: `XOXXXX,OOXXOX`

23. Statue Park [Čedomir Milanović] (92 points)

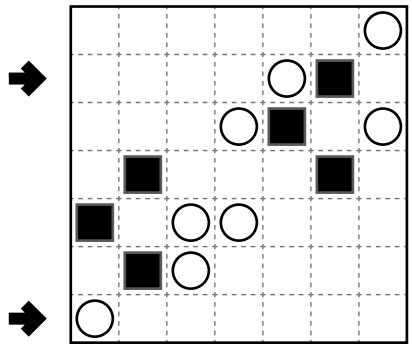
Shade some cells black (leaving the other cells white) so that the grid is divided into non-overlapping regions; cells of the same color are considered in the same region if they are adjacent along edges. The black regions must form the set of given shapes; each shape may be rotated and/or reflected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

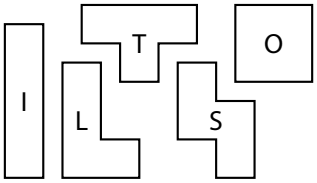
A cell with a black square must be shaded and a cell with a white circle must not be shaded.

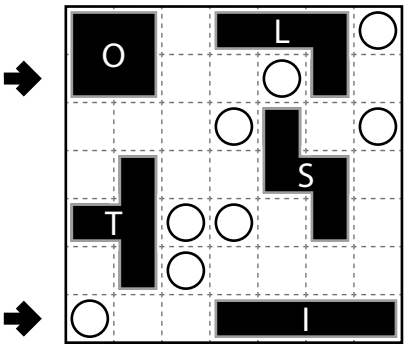
The letters on the given shapes are only for entering your answer.

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: OOAAALA,AAAIIII







24. Scrabble [Čedomir Milanović] (104 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 orthogonally, 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.

Some letters may be already supplied in the grid. For any such letter, all instances of that letter 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

A								
		A						
						A		
					A			A
A								
							A	
						A		

AUSTRIA
CROATIA
CYPRUS
GEORGIA
ICELAND
LUXEMBOURG
MACEDONIA
MOLDOVA
SPAIN

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		