

WPF PUZZLE GP 2024 COMPETITION BOOKLET

Host Country: Hungary

Viktor Samu, Zoltán Horváth, Zoltán Németh, Kartal Nagy

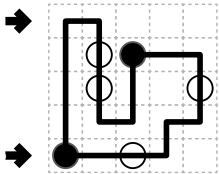
Special Notes: This round's theme is "Space: The Final Frontier". The first four puzzles have titles and gray shading for thematic purposes only, and can be ignored when solving. "Starlight" was invented by 稲葉直貴 (Naoki Inaba), who called it ムーンライト ("Moonlight").

1-2. Masyu [Viktor Samu] (11, 27 points)

Draw a single loop that passes orthogonally through centers of cells. The loop must go through all circled cells. The loop cannot intersect itself or enter the same cell more than once. The loop must go straight through the cells with white circles, with a turn in at least one of the cells immediately before or after each white circle. The loop must make a turn in all the black circles, but must go straight in both cells immediately before and after each black circle.

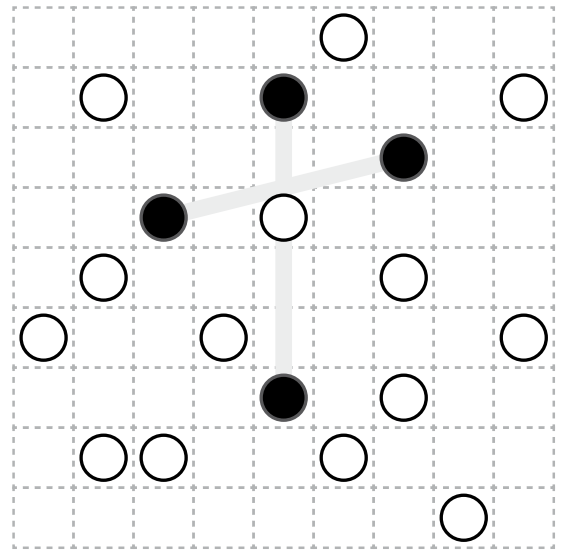
Answer: For each designated row, enter the letter for each cell, from left to right. The letter for a cell is 'I' if the loop goes straight through the cell, 'L' if the loop turns in the cell, and 'X' if the loop does not go through the cell. You may use other characters, as long as they are distinct.

Example Answer: LLXXX, LIILX



1a →

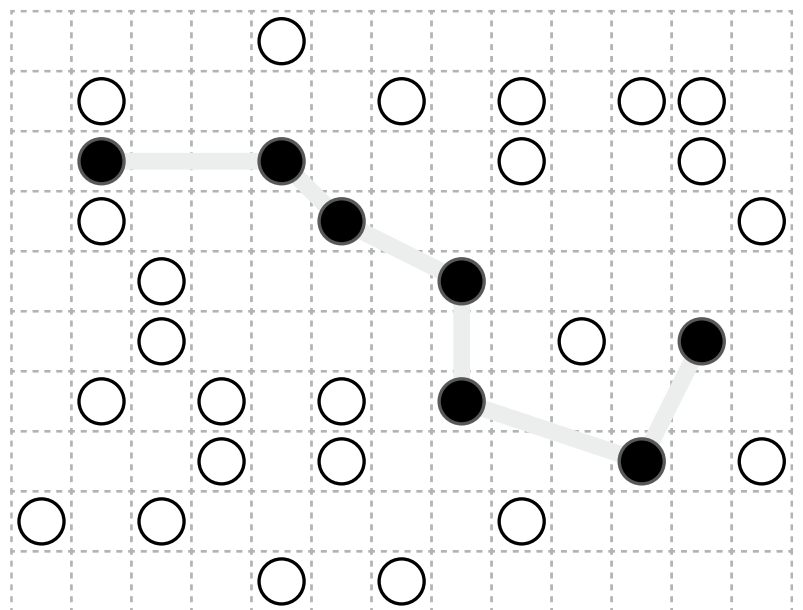
1b →



Southern Cross

2a →

2b →



Big Dipper

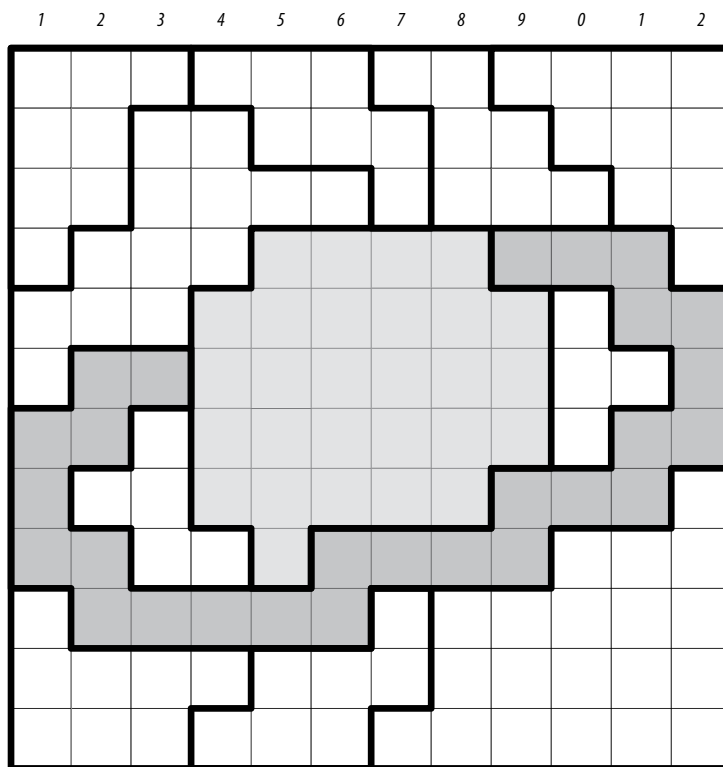
3-4. Star Battle [Viktor Samu] (21, 32 points)

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 cannot touch each other along an edge or a corner.

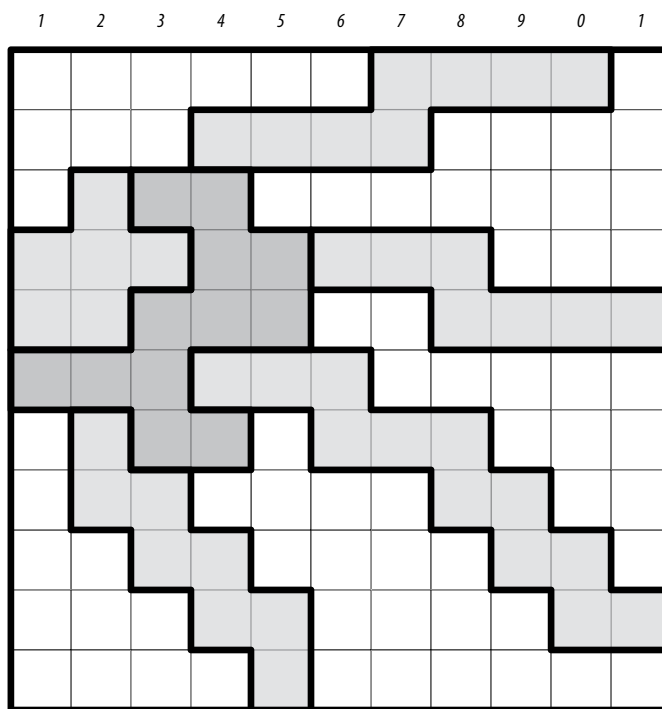
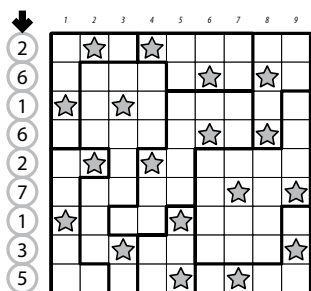
The numbers on top of the diagram are for Answer purposes only.

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



Saturn

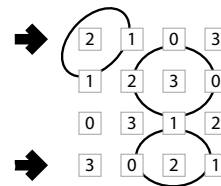


Sputnik 1



5-7. Orbits [Zoltán Horváth] (10, 9, 35 points)

Place a number from 0 to X-1 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 ellipses are drawn on the grid; for each ellipse, exactly one cell is entirely inside the ellipse. The number in that cell must equal the sum of all the numbers the ellipse passes through. Some numbers may already be filled in for you.



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

Example Answer: 2103, 3021

5a →

□	□	□	□	4
□	□	□	3	□
□	□	□	□	□
□	1	□	□	□
□	□	□	□	□

6a →

□	□	□	4	□
1	□	□	□	□
□	□	□	□	□
□	□	□	□	3
□	□	□	□	□

5b →

4	□	□	□	□
□	□	□	□	□
□	□	□	□	□
□	□	□	□	□
□	□	□	□	□

6b →

□	2	□	□	□
□	□	□	□	□
□	□	□	□	□
□	□	□	□	□
□	□	□	□	□

7a →

□	□	□	□	□	□
□	□	□	□	□	□
□	□	□	1	□	□
□	□	2	□	□	□
□	□	□	□	□	□
□	□	□	□	□	□

7b →

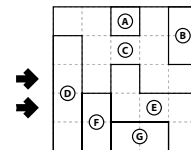
□	□	□	□	□
□	□	□	□	□
□	□	□	□	□
□	□	□	□	□
□	□	□	□	□



8-10. Spiral Galaxies [Zoltán Németh] (21, 35, 50 points)

Divide the grid along the indicated dashed lines into regions. Each region must be rotationally symmetric and contain exactly one circle, which must be at its center (the point of symmetry).

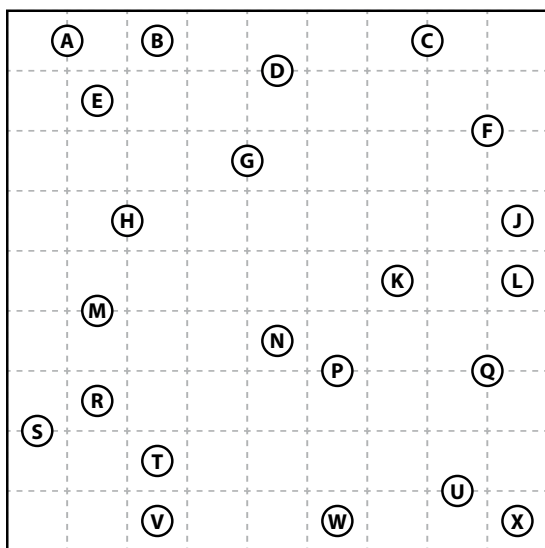
The letters inside the circles are for Answer purposes only.



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.

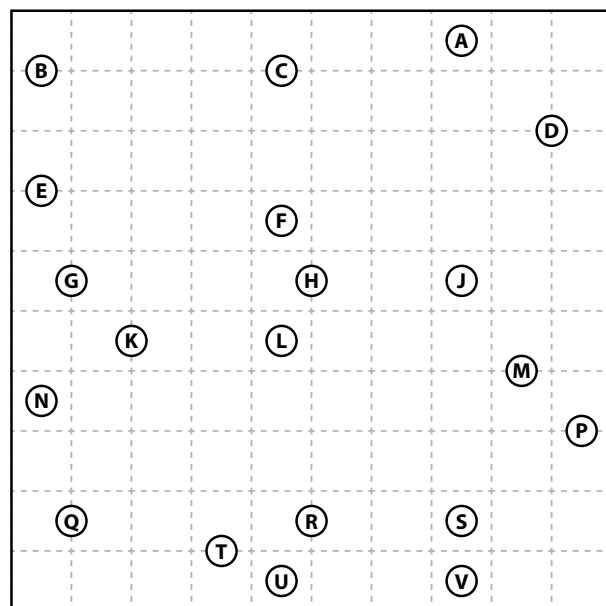
Example Answer: DCECC, DFEEE

8a →



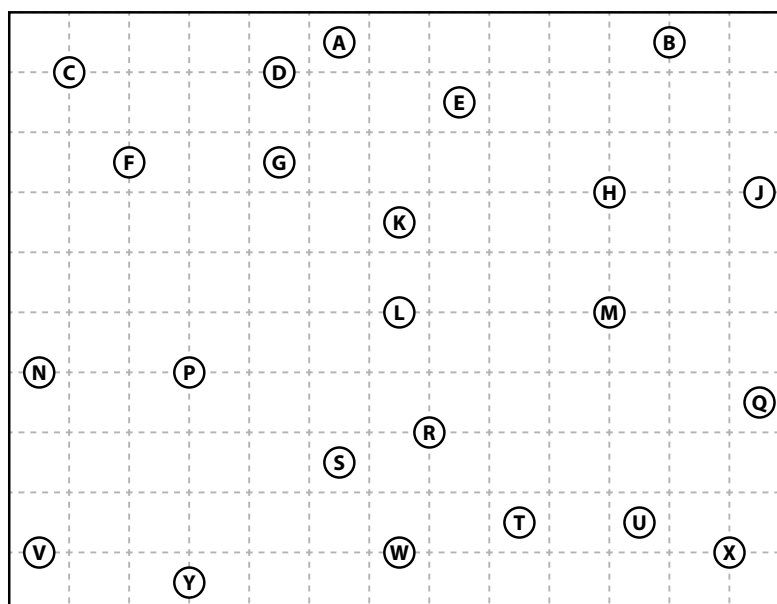
8b →

9a →



9b →

10a →



10b →



13-16. Tapa (Black Holes) [Zoltán Horváth] (9, 22, 36, 60 points)

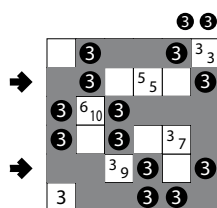
Shade some empty cells; cells with given numbers cannot be shaded. All shaded cells connect along edges to create a single connected region. (It is permissible for the region to touch itself at a corner, but touching at a corner does not connect the region.) No 2x2 group of cells can be entirely shaded.

Also, place a "black hole" (circled number) into some cells in the grid, no more than one black hole per cell. Each row and each column must contain exactly the set of black holes specified above and to the right of the grid. Every black hole must be in a shaded cell.

Numbers in a cell indicate the lengths of contiguous shaded 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 shaded 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.

A black hole "distorts space" and counts as its "mass" (the number in the circle) for purposes of calculating length for numbers in a cell (instead of 1). All black hole masses will be at least 2.

Answer: For each designated row, enter its contents from left to right. Use 'X' for an unshaded cell, 'O' for a shaded cell without a black hole, and 'B' for a shaded cell with a black hole. You may use other characters, as long as they are distinct.



Example Answer: OBXXXXB, OOXBxB

3

		3 3			
					9
1 3	3				
			1 5		

13a →

13b →

2

	7	3 4			1 7	
					1 4	
	3 4					
	1 3	3		2 3	3	

14a →

14b →

3 3 3

4

	4 6		2 3			1 7
	2 6		1 11			3 3
	2 2		2 6			2 5 4

15a →

15b →

16a →

16b →

	4 5							5 9
		1 7 1				3 3 3		
			3 13		4 4			
			1 7 1		2 8			
		3 7 3				1 6 1		
	4 4						4 7	



17-18. Moon or Sun [Zoltán Németh] (24, 18 points)

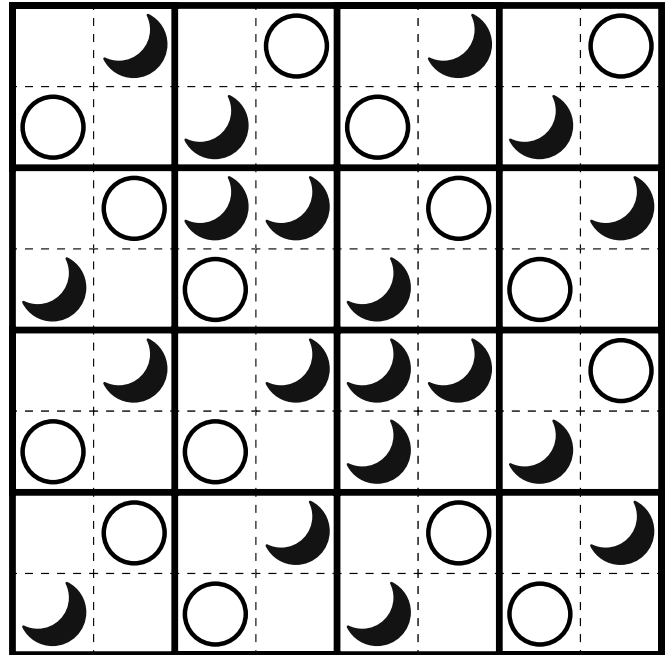
Draw a single loop that passes orthogonally through centers of cells. The loop cannot intersect itself or enter the same cell more than once.

For each outlined region, the loop must enter it exactly once (that is, for each region, all used cells must be consecutive along the loop's path) and must go through at least one cell with a symbol.

For each outlined region, the loop must either enter all cells with a moon symbol and no cells with a sun symbol, or enter all cells with a sun symbol and no cells with a moon symbol. When the loop leaves one outlined region and enters another, the symbols that the loop goes through in those two regions must be different.

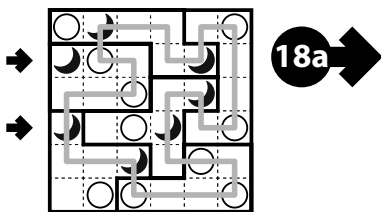
17a →

17b →



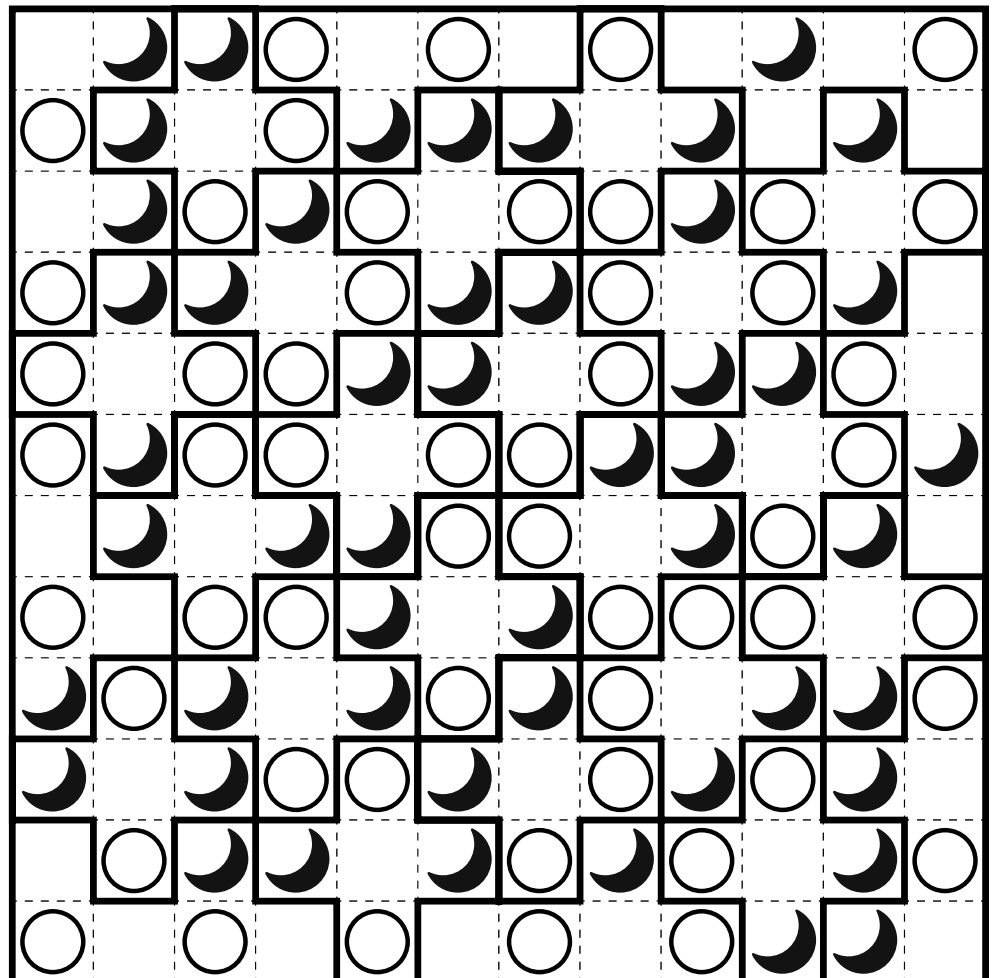
Answer: For each designated row, enter the letter for each cell, from left to right. The letter for a cell is 'I' if the path goes straight through the cell, 'L' if the path turns in the cell, and 'X' if the path does not go through the cell. You may use other letters or numbers, as long as they are distinct.

Example Answer:
XLLLLI, IXXILL



18a →

18b →

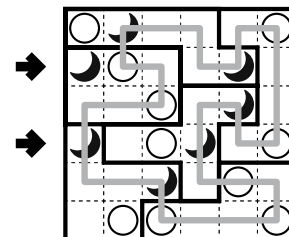




19. Moon or Sun [Zoltán Németh] (31 points)

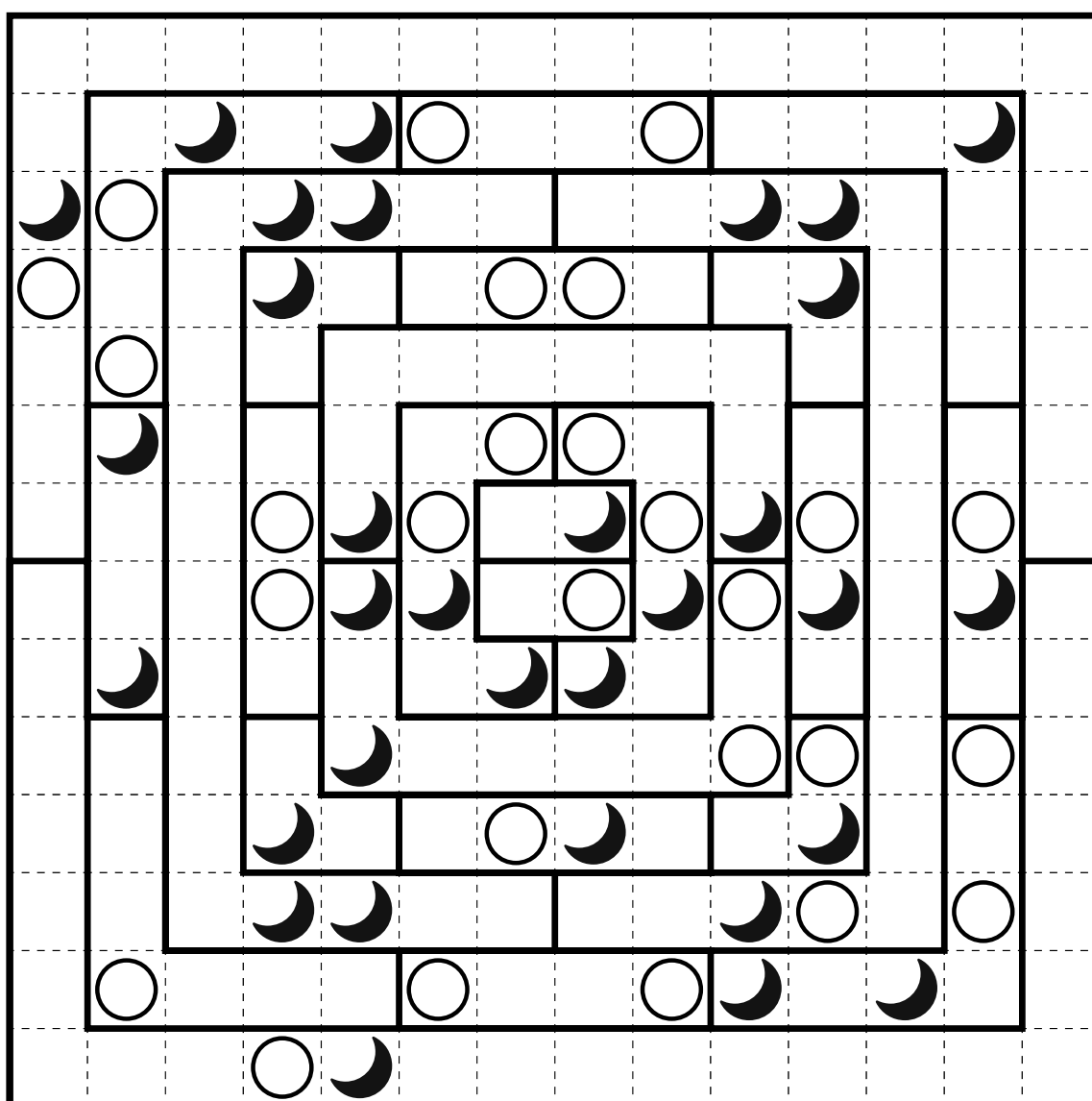
Answer: For each designated row, enter the letter for each cell, from left to right. The letter for a cell is 'I' if the path goes straight through the cell, 'L' if the path turns in the cell, and 'X' if the path does not go through the cell. You may use other letters or numbers, as long as they are distinct.

Example Answer: XLLLLL, IXXILL



19a →

19b →



20-21. Letter Pairs (4-Way, Full) [Viktor Samu, Kartal Nagy] (17, 44 points)

Put exactly one letter into each cell so that the given words can be read in *any one* of the four orthogonal directions in consecutive cells in the grid (words do not “bend”). Each cell is used by exactly one word (the words do not cross or overlap each other). If a dot is given between two cells, it means that both cells contain the same letter. If a dot is not given between two cells, it means that both cells do not contain the same letter. (The total number of letters will match the total number of cells.)

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

Example Answer: ATHISS, LLAMSI

→	A	T	H	I	S	S
→	L	•	L	A	M	S
	E	L	Z	•	Z	U

V A S T

V O I D

A B Y S S

E M P T Y

S P A C E

C O S M O S

V A C U U M

20a →

20a →

S U N

M A R S

M O O N

E A R T H

V E N U S

S A T U R N

U R A N U S

J U P I T E R

M E R C U R Y

N E P T U N E

21a →

21a →

22-23. Binary Stars [Viktor Samu] (6, 23 points)

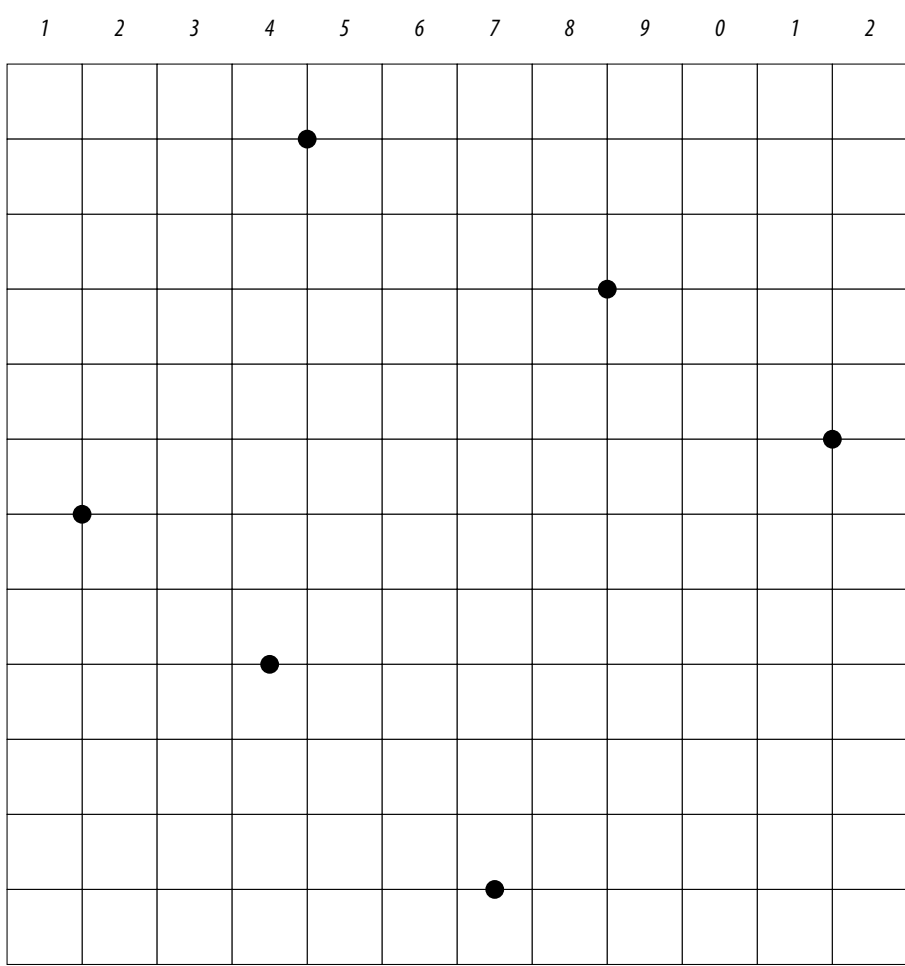
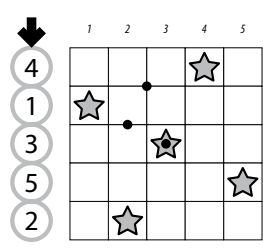
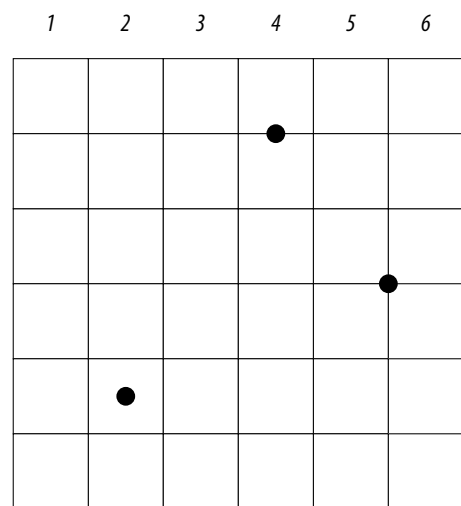
Place stars into some cells in the grid, no more than one star per cell. Each row and each column must contain exactly one star. Cells with stars cannot touch each other along an edge or a corner.

For any pair of two stars, the midpoint is defined to be the location that is on a straight line connecting the centers of those two stars and is exactly the same distance away from the centers of those two stars. Some black dots are provided on the grid; each one must be a valid midpoint (but can be the midpoint of more than one pair of stars). Not all possible midpoints are given.

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 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 star appears in column 10.

Example Answer: 41352





25-28. Starlight [Viktor Samu (25), Kartal Nagy (26-28)] (7, 35, 44, 68 points)

Place stars and clouds into some empty cells in the grid, no more than one symbol (star or cloud) per cell. Each row and each column must contain exactly the number of stars and clouds specified above and to the right of the grid.

Some cells are not empty and contain planets. Each star "lights up" the first cell that contains a planet or a cloud in each of the four orthogonal directions. When a planet is lit up, the two quarters on the side that is lit up are white. A black quarter indicates that the planet is not lit up from either of the two appropriate directions.

Some cells might be marked with a cross; do not put any symbols into those cells.

Answer: For each indicated row, enter its contents from left to right. Use 'S' for a cell with a star, 'C' for a cell with a cloud, 'X' for a cell without either (including cells with planets or crosses). You may use other characters, as long as they are distinct.

Example Answer: XXSXCX, XXXXSC

