WPF SUDOKU/PUZZLE GRAND PRIX 2021

ROUND 1

WPF PUZZLE GP 2021 COMPETITION BOOKLET

Host Country: Poland

Jan Mrozowski, Piotr Gdowski, Tomasz Stańczak, Krystian Świderski

Special Notes: None.

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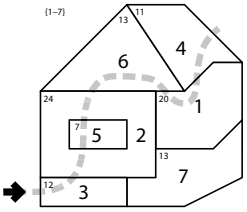
1. Adjacency Sums [Piotr Gdowski] (86 points)

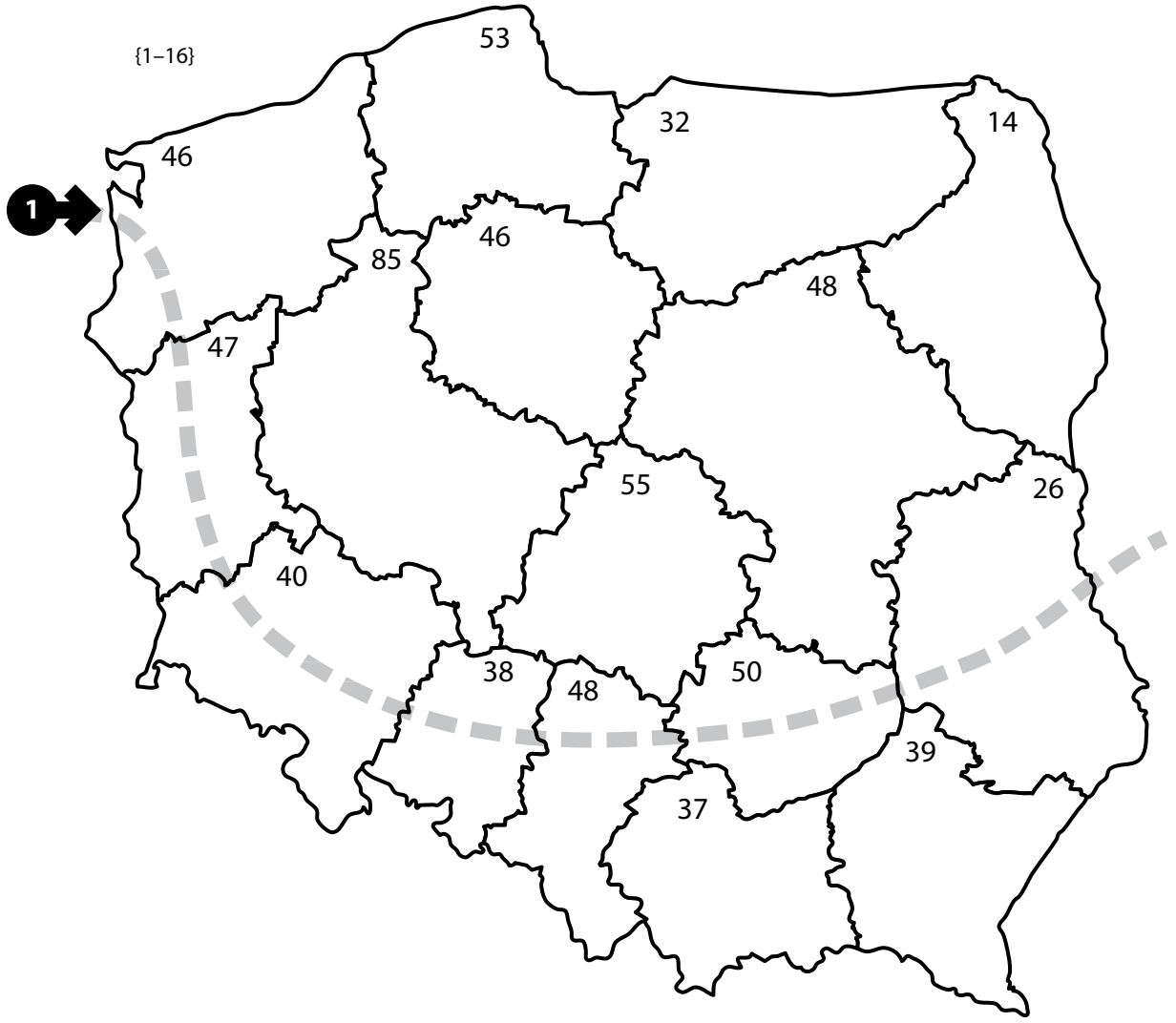


Label each region with a number from the specified list so that every region is labeled with a different number. The printed number in each region represents the sum of its own labeled number and the labeled numbers in all adjacent regions.

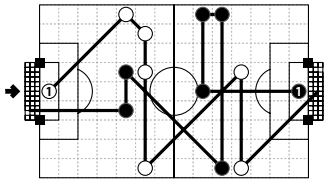
The thick dotted line is only used for entering your answer.

Answer: Starting from the left side, enter the region's label each time the thick dotted line crosses a region boundary. Use only the last digit for two-digit numbers; e.g., use '0' for a region labeled with 10.

Example Answer: 3252614



2-3. Football Pass [Jan Mrozowski] (17, 14 points)

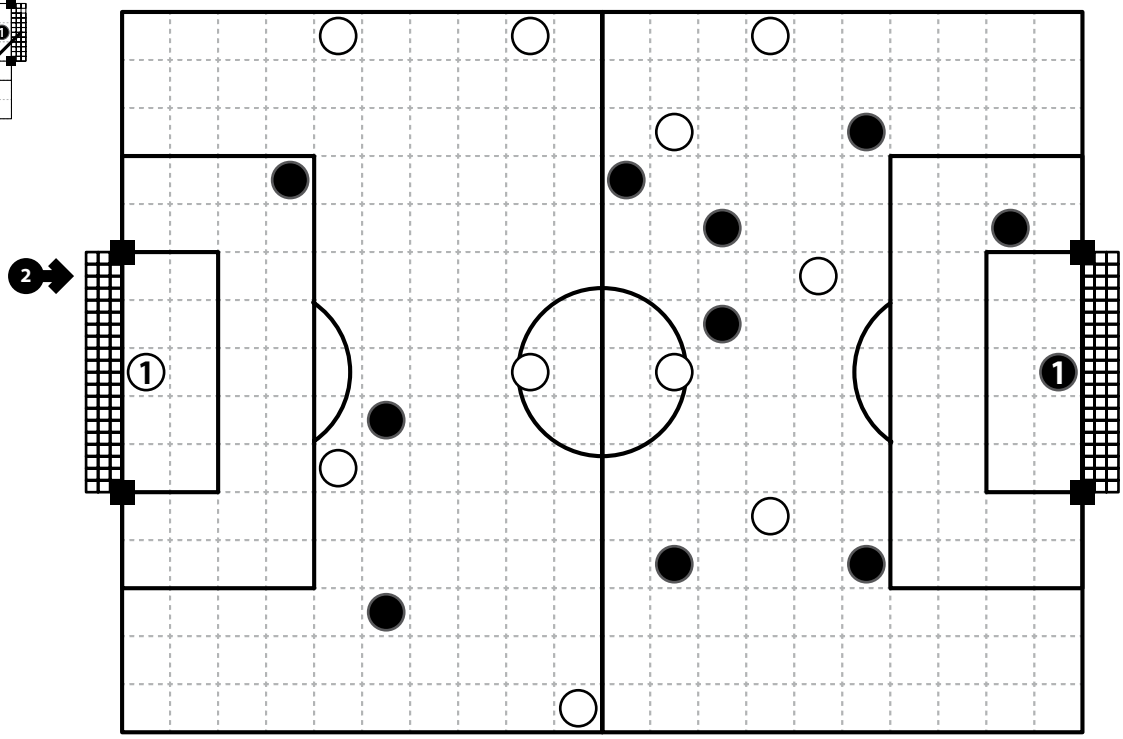


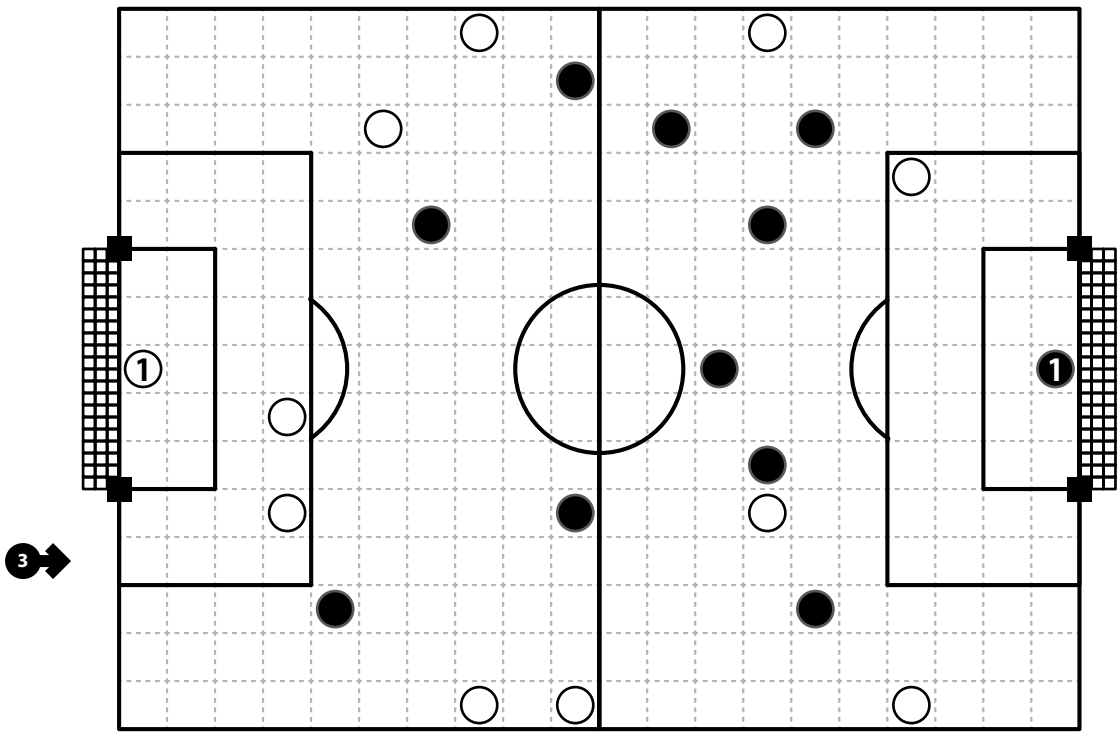
Find two paths. Each path must start at one of the circles labeled with '1', encounter all circles of the same color exactly once each, and exit the grid between the "goalposts" (the black squares on the side opposite the starting circle). Each path may only travel in the eight standard directions, may only change direction at circles, and may not encounter a circle of the other color (although it may pass through the corner of a cell containing a circle of the other color). The two paths may intersect themselves and/or each other, but must not touch any goalposts.

The curves and lines drawn on and outside the grid are purely decorative and serve no purpose in the puzzle.

Answer: For each designated row, enter the number of times a path encounters (the center of) each cell, from left to right. A path that encounters a cell more than once can add more than 1 to the cell's number.

Example Answer:
10001200132111





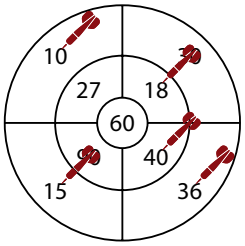
4-5. Darts [Krystian Świderski] (37, 29 points)

"Throw" the given number of darts onto the dartboard. Each dart must be thrown into a numbered region, and no two darts can be thrown into the same region. The sum of the numbers in the regions with darts must add up to the specified target score.

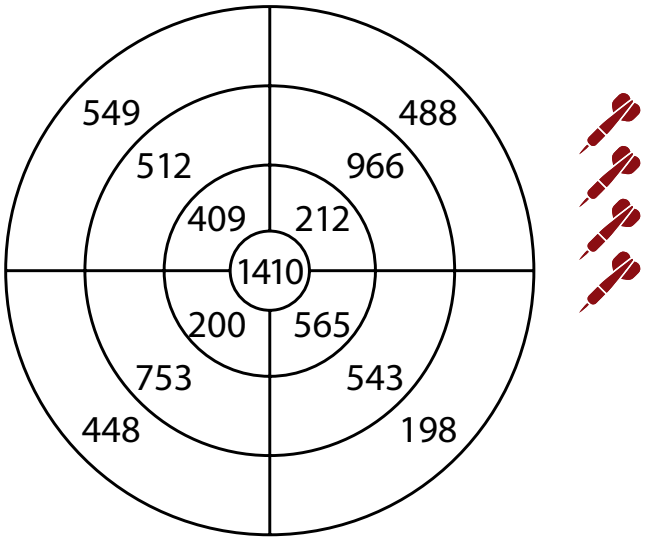
Answer: Enter the numbers in the regions with darts, from smallest to largest. Do not use any separating characters.

Example Answer: `1015183640`

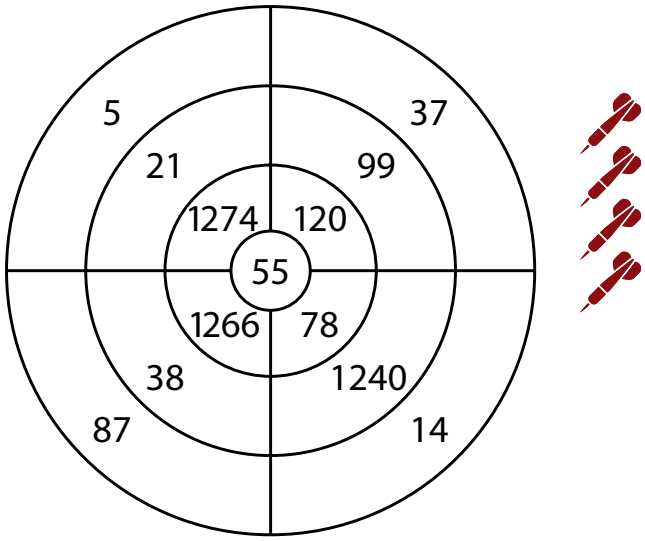
Target = 119



5 Target = 2021



4 Target = 1484

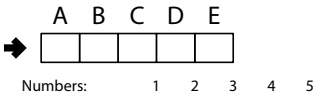


6-7. Letter Weights [Piotr Gdowski] (11, 24 points)

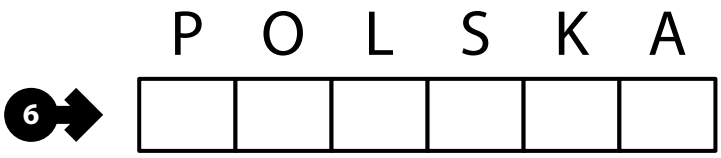
Write a number under each letter (in each cell) so that the numbers corresponding to the letters in each given word have the given sum. Different letters must have different numbers. The list of allowed numbers is given in a row underneath the cells.

Answer: Enter the contents of the cells, from left to right. Enter all digits for multi-digit numbers (for example, if the cell contents were 12, then 5, then 25, enter `12525`).

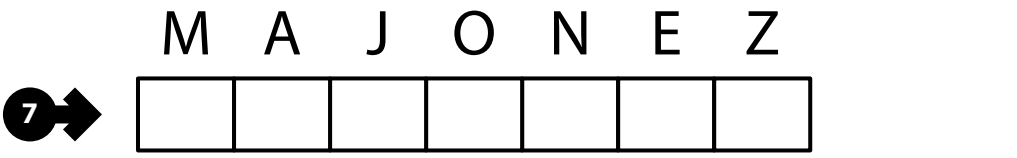
Example Answer: `25431`



CAB = 11
BEE = 7
ABE = 8



SOK = 18
KLASA = 33
KLOPS = 30
POPAS = 35
POSOKA = 42



ZEZ = 13
OZON = 17
JAMA = 20
ZJEM = 20
OMAM = 25
NEONEM = 38

8. Scrabble (Multiple Letters) [Piotr Gdowski] (63 points)

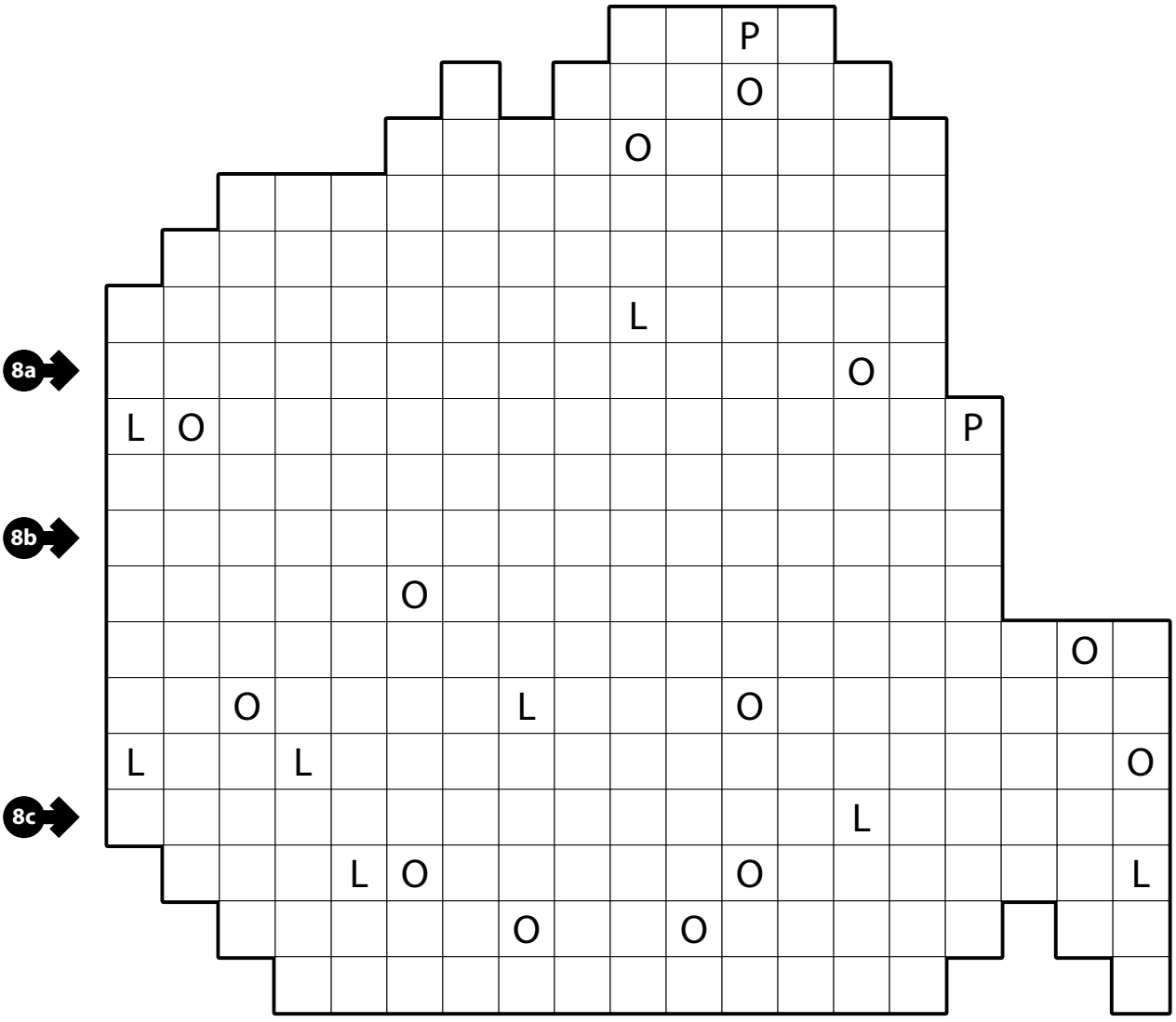
Put at most one letter into each cell so that the given words can be read either across (left-to-right) or down (top-to-bottom) in consecutive cells in the grid. Every word must appear in the grid exactly once, and no other words may appear in the grid (that is, if two cells are filled and are adjacent 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.

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

WARSZAWA	GDANSK	KATOWICE	SOSNOWIEC	BRZEG
KRAKOW	SZCZECIN	GDYNIA	KIELCE	KROBIA
LODZ	BYDGOSZCZ	CZESTOCHOWA	RZESZOW	SEJNY
WROCLAW	LUBLIN	RADOM	GLIWICE	PABIANICE
POZNAN	BIALYSTOK	TORUN	ZABRZE	JASLO



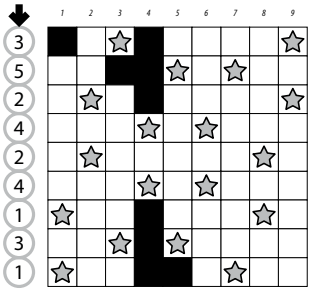
9-10. Battle Stars [Krystian Świderski] (22, 65 points)

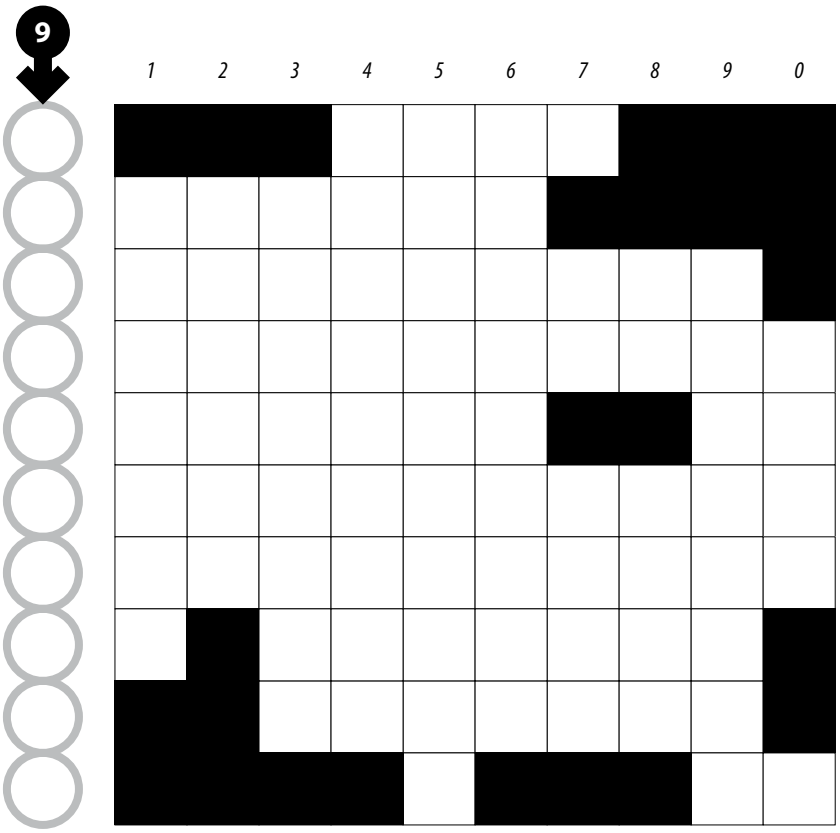
Place stars into some cells in the grid, no more than one star per cell. Each row and each column must contain exactly two stars. Cells with stars may not touch each other, not even diagonally. Regions shaded in black are not cells and may not contain stars.

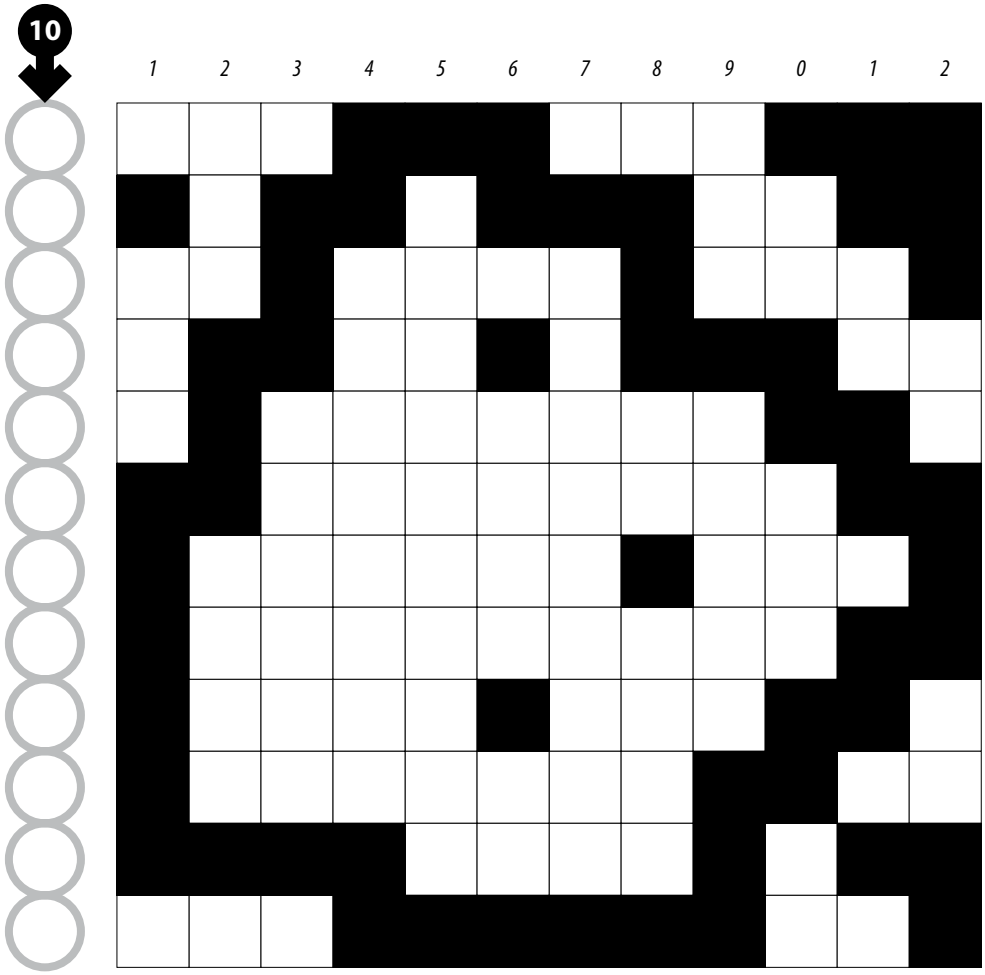
The numbers on top of the diagram are for Answer purposes only.

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: 352424131





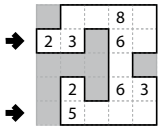


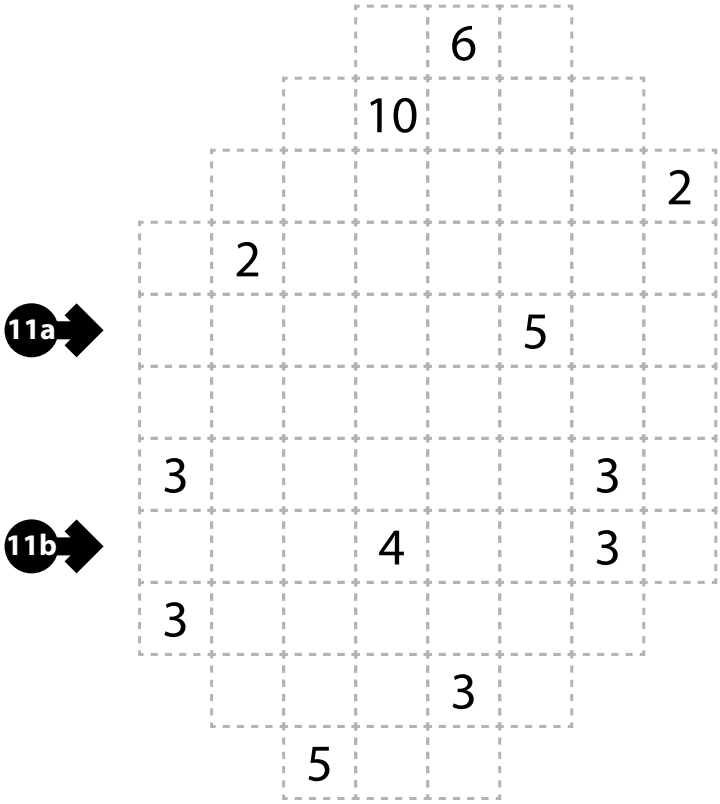
11. Cave [Piotr Gdowski] (24 points)

Shade some cells to leave behind a single orthogonally-connected group—the cave—with no shaded cells enclosed within the cave. In other words, all shaded cells must be connected edge-wise by other shaded cells to an edge of the grid. All numbered cells must be a part of the cave (and therefore not shaded). Each number indicates the total count of non-shaded cells connected in line vertically and horizontally to the numbered cell *including the cell itself*.

Answer: For each designated row, enter the length in cells of each of the cave segments (*not the shaded cells outside the cave*) from left to right. Use only the last digit for two-digit numbers; e.g., use '0' for a segment of length 10. If there are no cells belonging to the cave in the row, enter a single digit '0'.

Example Answer: `22,4`





12. Anglers' Cave [Piotr Gdowski] (39 points)

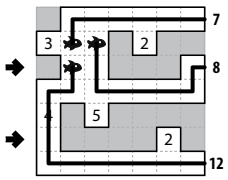
Rules for Cave (above) apply. In addition:

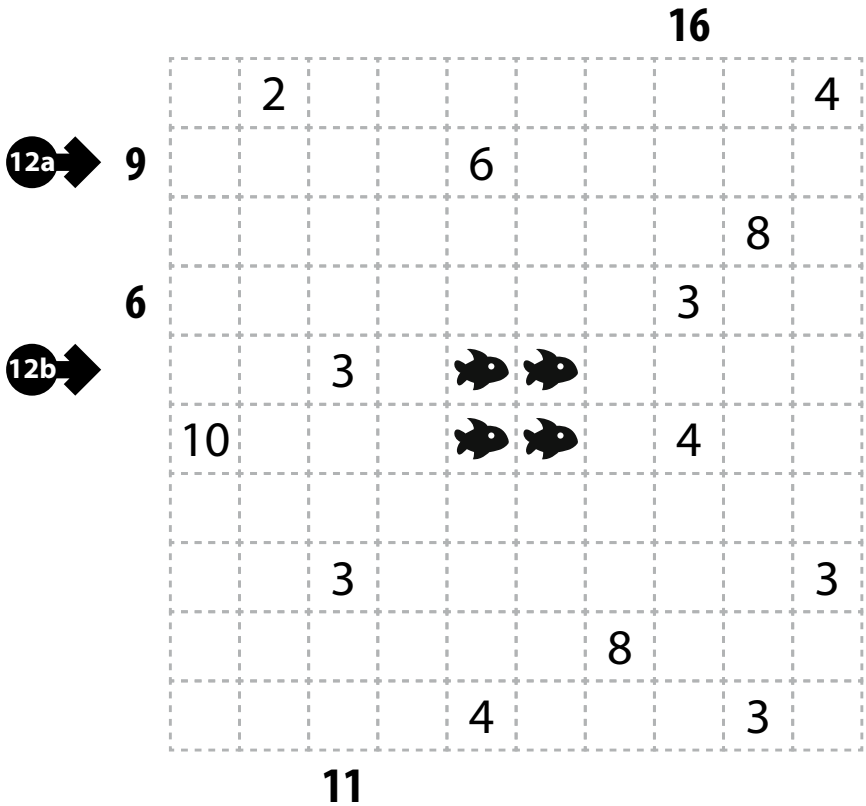
Each number outside the grid represents an angler, each of whom has caught a different fish on their line. Their line is represented by a path that moves orthogonally from the angler to their fish, and the number represents the length of that line (or, the number of cells that line encounters, including the fish's cell but not the angler). Angler's lines may not overlap or cross each other.

Angler's lines must stay completely within the cave (including the fishes). It is possible for some cells in the cave to not contain an angler's line.

Answer: Same as for Cave (above).

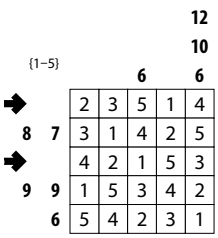
Example Answer: `21,11`





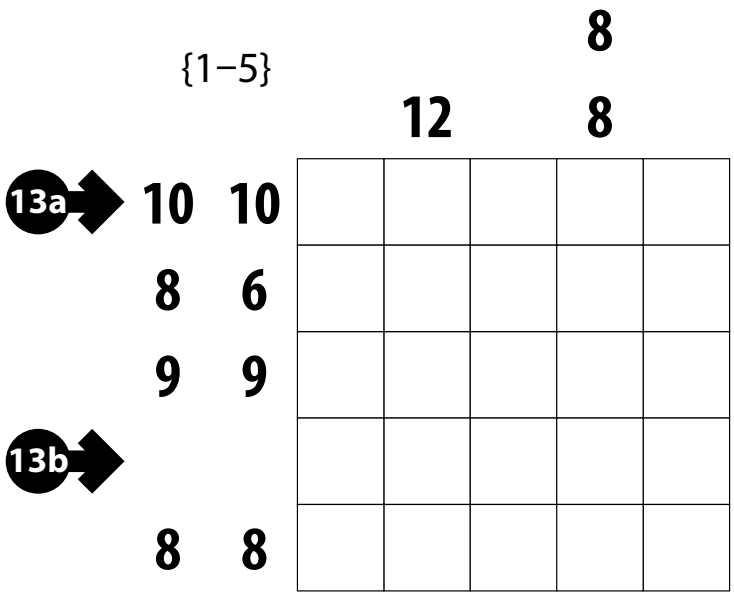
13-14. Triplet Sums [Tomasz Stańczak] (11, 24 points)

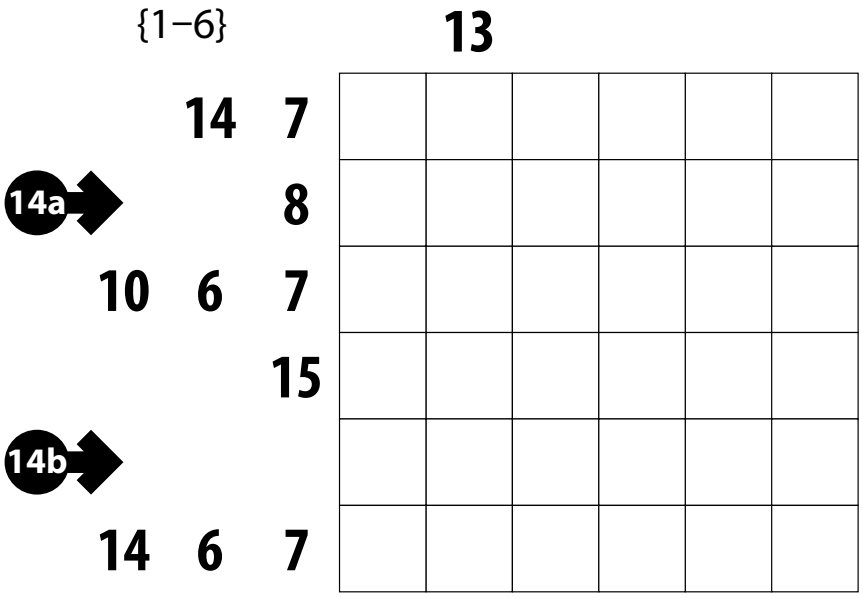
Place a number from the specified list into each cell so that each number appears exactly once in each row or column. Each clue number outside the grid indicates a sum of three adjacent numbers along that row or column. If multiple clue numbers are given in a row or column, then their sums appear in positional order (specifically, two identical clue numbers must refer to different groups of grid numbers).



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

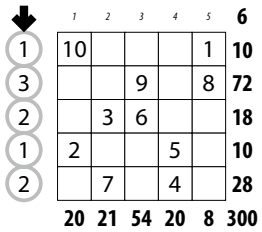
Example Answer: `23514,42153`





15. Products [Tomasz Stańczak] (48 points)

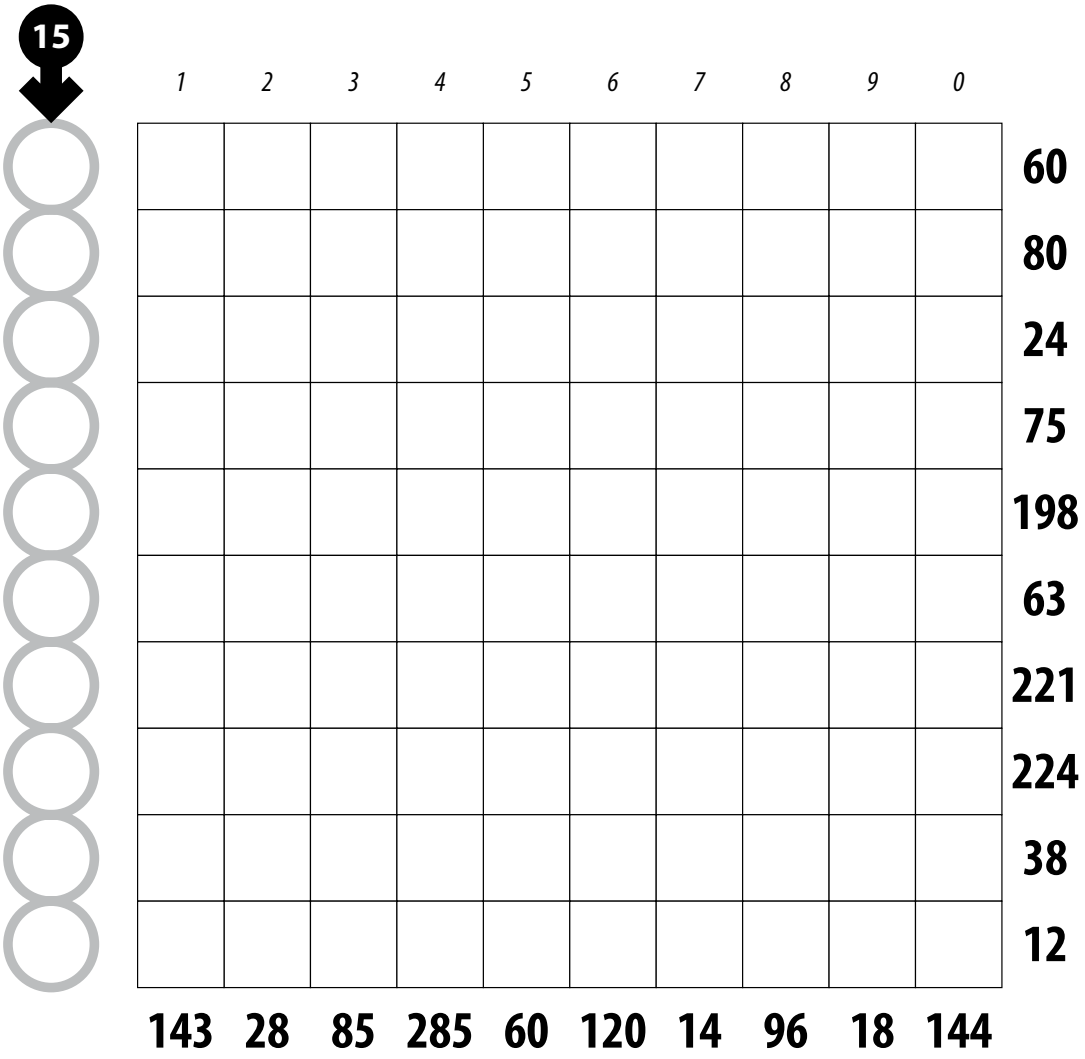
Fill in some cells with numbers. Each number from 1 to X must appear exactly once, where X is twice the number of rows in the grid. Numbers cannot share a cell. Each row must contain exactly two numbers. Each column must contain exactly two numbers. (There are no similar restrictions on the diagonals.) When given, the numbers below and to the right of the grid indicate the multiplicative product of all numbers in that row, column, or diagonal, respectively. (The product of one number is the number itself; the product of no numbers is 1.)



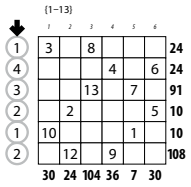
The numbers on top of the diagram are for Answer purposes only.

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

Example Answer: 13212



16. Products (Antiknight) [Tomasz Stańczak] (142 points)



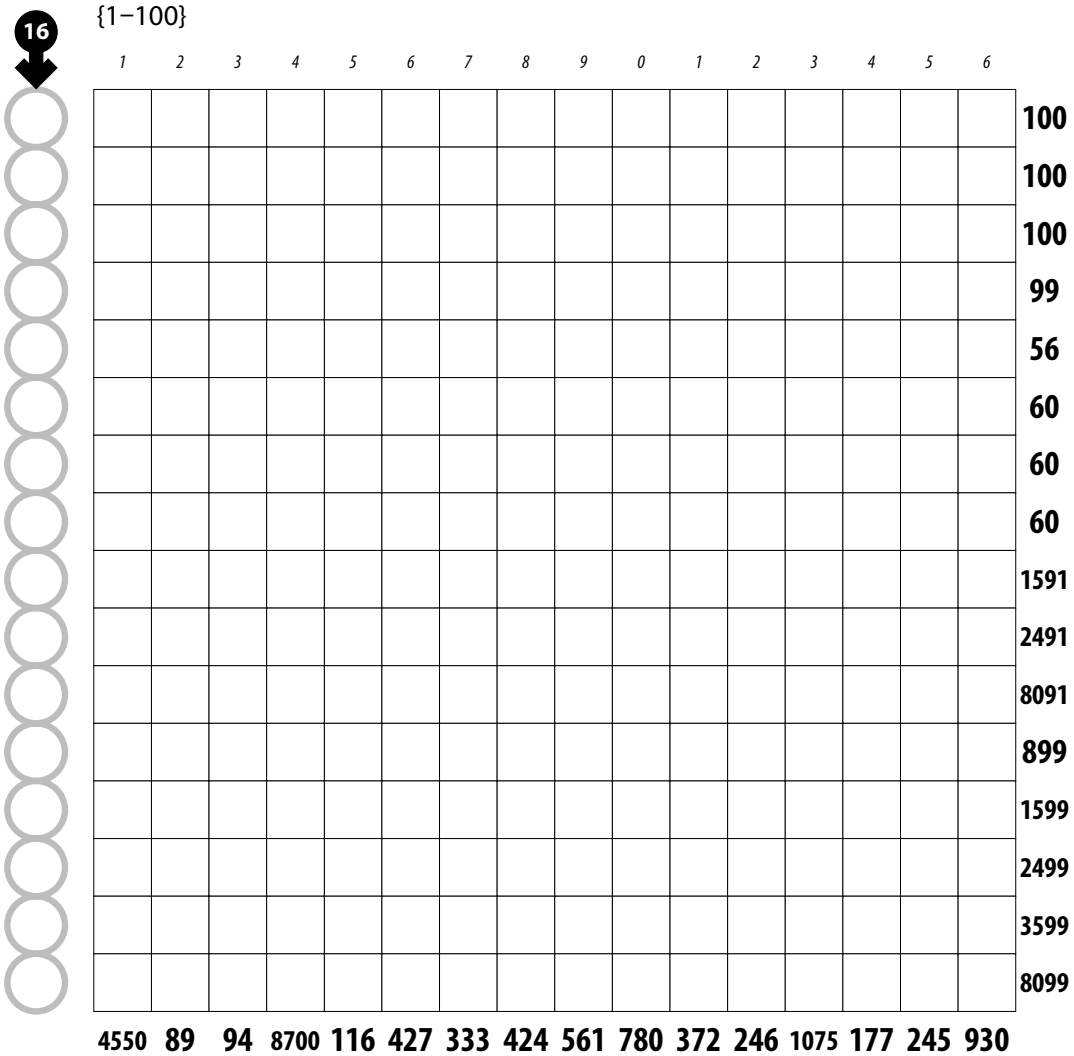
Fill in some cells with numbers in the specified range. No number may appear more than once. Numbers cannot share a cell. Each row must contain exactly two numbers. Each column must contain exactly two numbers. When given, the numbers below and to the right of the grid indicate the multiplicative product of both numbers in that row or column, respectively.

Cells with numbers must not be a knight's move apart (2 rows and 1 column, or 1 row and 2 columns).

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

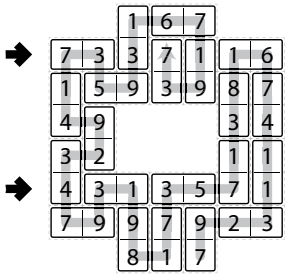
Answer: For each row from top to bottom, enter the number of the first column from the left where a number appears (the number on top of that column). Use only the last digit for two-digit numbers; e.g., use '0' if the first number appears in column 10.

Example Answer: 143212



17-18. Prime Path [Jan Mrozowski] (78, 83 points)

Find a path that goes through each digit once. The path may only travel in the four standard directions and may *not* intersect itself. Reading pairs of digits along the path should result in two-digit prime numbers. No prime number may appear more than once, and adjacent prime numbers *along the path* may not have any digits in common.



A list of all prime numbers used along the path is supplied for your convenience.

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 starts or ends in the cell. You may use other letters or numbers, as long as they are distinct.

Example Answer: LLIXILL, ILLLILI

11	37	67
13	41	71
17	43	73
19	47	79
23	53	83
29	59	89
31	61	97

17a

17b

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

11	37	67
13	41	71
17	43	73
19	47	79
23	53	83
29	59	89
31	61	97

18a

18b

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