WPF SUDOKU/PUZZLE **GRAND PRIX** 2020

ROUND 5

WPF PUZZLE GP 2020 INSTRUCTION BOOKLET

Host Country: Hungary

Zoltán Horváth, Victor Samu, László Osvalt

Special Notes: The writers would like to thank Pál Madarassy for puzzle checking. Some pages will have their puzzles rotated, to better fit the puzzle on the page. Please note that the theme was chosen in January, before current events made it less appropriate for 2020. Some puzzles use color; the coloring is for aesthetic purposes only.

Points:		
1.	Password Path	26
2.	Fillomino	42
3.	Spiral Galaxies	21
4.	Spiral Galaxies	34
5.	Dominion	28
6.	Hydra	23
7.	Kropki	34
8.	Tapa (Transparent)	51
9.	Tapa (Wall)	55
10.	LITS	40
11.	Star Battle	46
12.	Kurotto	40
13.	Fillomino (Cipher)	74
14.	Scrabble (2+ Crossings)	53
15.	Hexa 7	55
16.	Yajilin	78
17.	Hex Islands	80
TOTAL:		780

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1. Password Path [Zoltán Horváth] (26 points)

Find a path that starts at the upper-left letter, ends at the lower-right letter, goes through each letter once, and repeats only the password (given below the grid). The path may only travel in the eight standard directions and may *not* intersect itself.

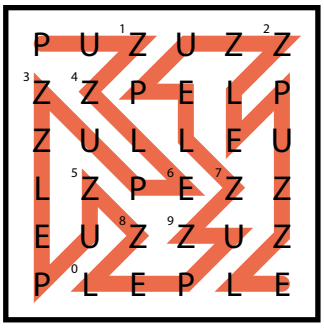
The small digits are only used for entering your answer.

Answer: Enter the order in which the digits appear on the path.

Example Answer: 1463580972

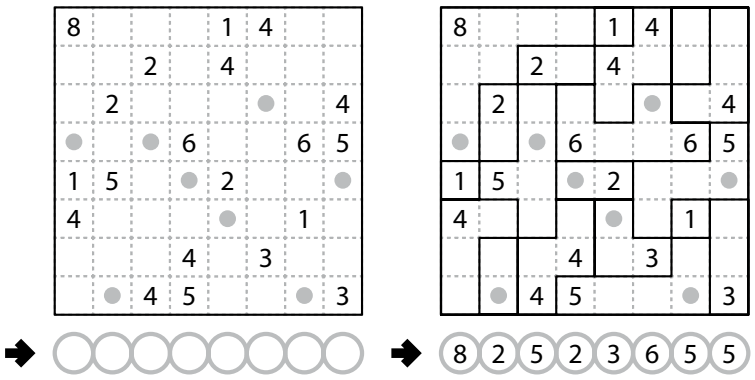
P	U	1 Z	U	Z	2 Z
3 Z	4 Z	P	E	L	P
Z	U	L	L	E	U
L	5 Z	P	6 E	7 Z	Z
E	U	8 Z	9 Z	U	Z
P	0 L	E	P	L	E

PUZZLE



2. Fillomino [Victor Samu] (42 points)

Divide the grid along the dotted lines into regions (called polyominoes) so that no two polyominoes with the same area share an edge. Inside some cells are numbers; each number must equal the area of the polyomino it belongs to. A polyomino may contain zero, one, or more of the given numbers. (It is possible to have a "hidden" polyomino: a polyomino without any of the given numbers. "Hidden" polyominoes may have any area, including a value not present in the starting grid, such as a 6 in a puzzle with only clues numbered 1-5.)



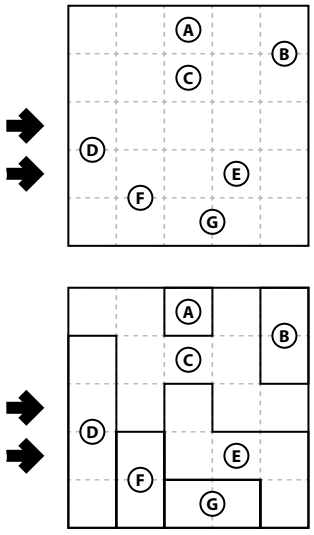
The dots in cells are only used for entering your answers.

Answer: Enter the area of the polyomino 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 polyomino of size 10.

Example Answer: `82523655`

3-4. Spiral Galaxies [Zoltán Horváth] (21, 34 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.



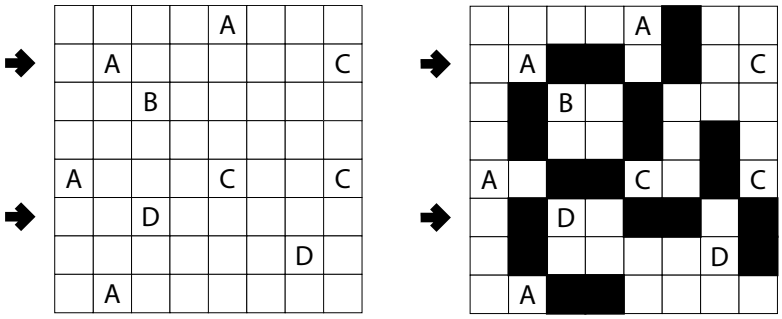
The letters inside the circles are for Answer purposes only. Any areas marked in gray are not part of the grid.

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`

5. Dominion [Zoltán Horváth] (28 points)

Shade some empty (non-lettered) 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. All black regions must have exactly 2 cells. All white regions must contain at least one lettered cell. All lettered cells within the same (white) region must contain the same letter. All cells that contain the same letter must be in the same region.



Answer: For each designated row, enter its contents from left to right. For the contents of a white cell, enter the letter for a lettered cell in that region. For the contents of a black cell, enter the letter 'X'.

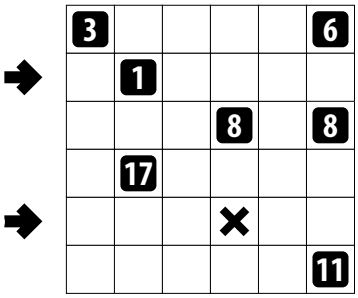
Example Answer: `AAXXAXCC,AXDDXXDX`

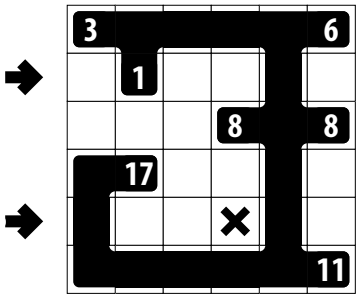
6. Hydra [Victor Samu] (23 points)

Locate a "hydra" in the grid. The hydra is a region of orthogonally-connected cells. The hydra cannot go through any cells marked with 'x'. No 2×2 group of cells can be entirely shaded black, and all cells that are not part of the hydra must be connected orthogonally (through other non-hydra cells) to the edge of the grid (in other words, the hydra may not loop or touch itself diagonally). All hydra cells that touch only one other hydra cell are provided. One of them is the "tail" of the hydra and labeled with the number 1; the others are the "heads" of the hydra and each one is labeled with the number of hydra cells that are needed to connect the tail of the hydra with that head (including the head and tail cells).

Answer: For each designated row, enter its contents. Use `O` for a cell occupied by the hydra and `X` for a cell not occupied by the hydra. Alternatively, you may use any two distinct characters instead of 'XO'.

Example Answer: `XOXXOX,OXXXOX`



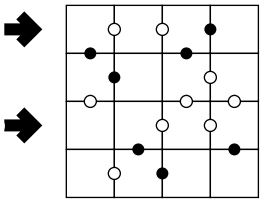


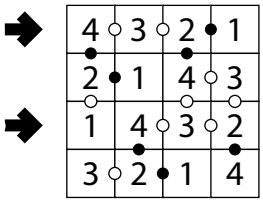
7. Kropki [Victor Samu] (34 points)

Place a number from 1 to X (integers only) into each cell so that each number appears at most once in each row and column. (X is the number of cells in each row.) A white dot on the edge of two cells indicates that those two cells must contain consecutive numbers; a black dot on the edge of two cells indicates that a number in one of those cells is double the value of the number in the other cell. If 1 and 2 are in adjacent cells, then the dot between them could be either color. If there is no dot on the edge of two cells, it means neither a black nor a white dot could go there.

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

Example Answer: `4321,1432`





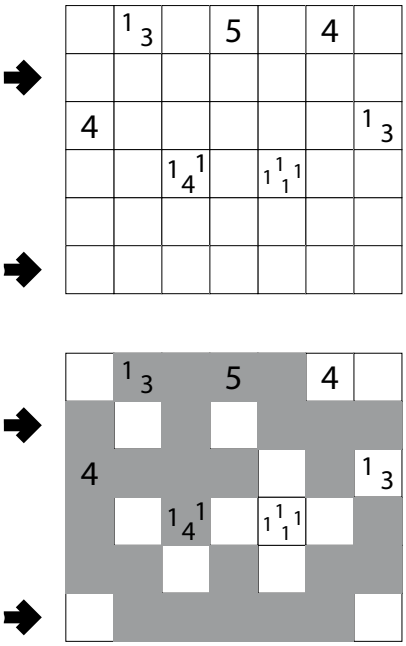
8. Tapa (Transparent) [Zoltán Horváth] (51 points)

Shade some cells black (unlike regular Tapa, cells with numbers *can* be shaded). All black 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 2×2 group of squares can be entirely shaded black.

Numbers in a cell indicate the sizes of all orthogonally-connected black cell regions within the "block" of cells that includes all cells touching the numbered cell and the cell itself (usually 9 cells, but fewer at the edges). 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 can be shaded black.

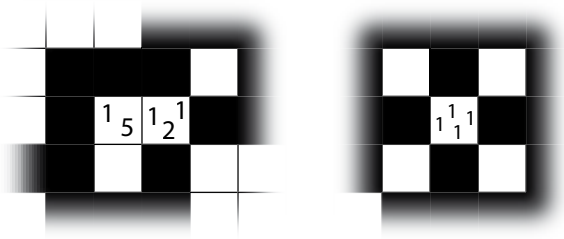
Answer: For each designated row, enter the length in cells of each of the shaded segments from left to right. Use only the last digit for two-digit numbers; e.g., use '0' for a segment of size 10. If there are no black cells in the row, enter a single digit '0'.

Example Answer: `113,5`



9. Tapa (Wall) [Zoltán Horváth] (55 points)

Tapa Clue Examples



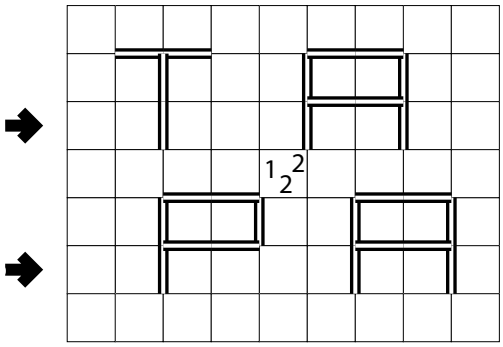
Shade some empty cells black; cells with numbers cannot be shaded. All black cells connect along edges to create a single connected region. (It is permissible for the region to touch itself at a corner, but touching at a corner does not connect the region.) No 2×2 group of squares can be entirely shaded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

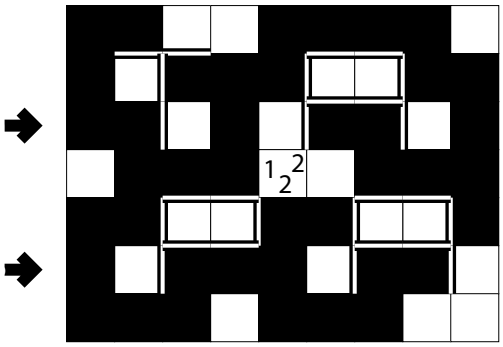
Numbers in a cell indicate the lengths of contiguous black cell groups along the "ring" of 8 cells touching that cell (fewer for cells along the outside edge). If there is more than one number in a cell, then there must be at least one white (unshaded) cell between the black cell groups. The numbers 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 black.

There are some "walls" (highlighted edges) given in the grid. Exactly one of the two cells connected to the wall must be black.

Answer: For each designated row, enter the length in cells of each of the shaded segments from left to right. Use only the last digit for two-digit numbers; e.g., use '0' for a segment of size 10. If there are no black cells in the row, enter a single digit '0'.

Example Answer: `2121,132`





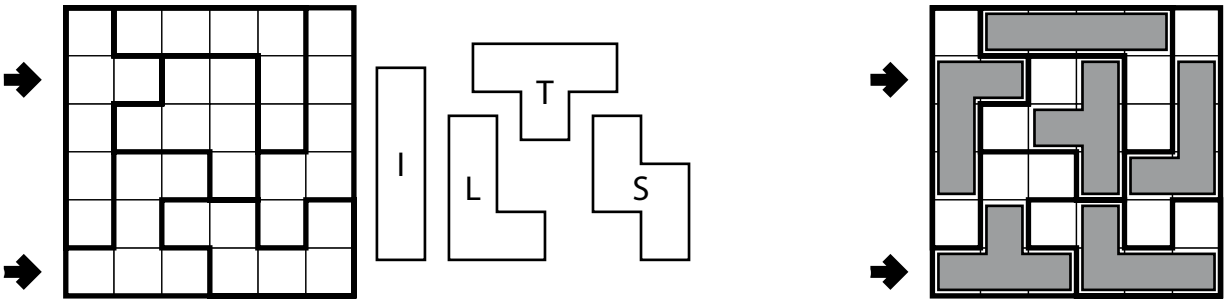
10. LITS [Victor Samu] (40 points)

Shade exactly four connected cells in each outlined region to form a tetromino, so that the following conditions are true: (1) All tetrominoes are connected into one large shape along their edges; (2) No 2×2 group of cells can be entirely shaded; (3) When two tetrominoes share an edge, they must not be of the same shape, regardless of rotations or reflections. (Not all four possible shapes have to be present in the grid; for example, it is possible for your solution to not have any "I" shapes.) Cells with an 'X' (if given) are not part of any region.

A list of shapes to the letters "LITS" is provided. This is only needed 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 tetromino occupying that cell, or the letter 'X' if the cell is not shaded.

Example Answer: LLXTXL, TTTLLL



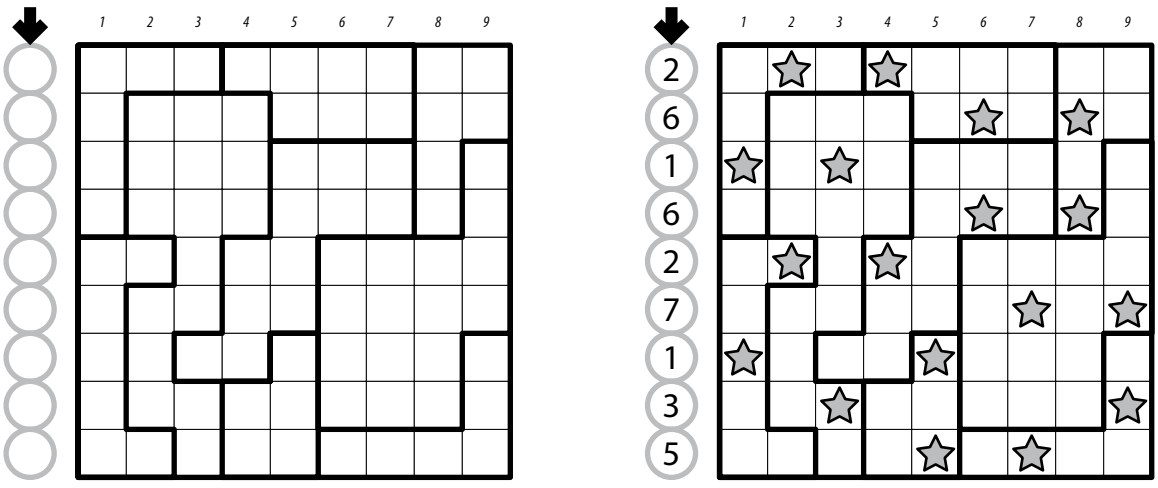
11. Star Battle [Victor Samu] (46 points)

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

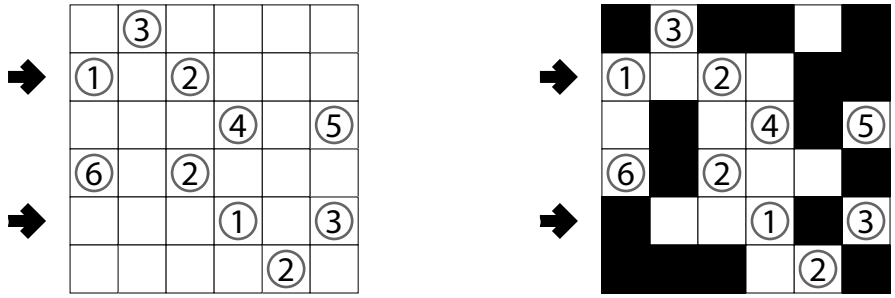


12. Kurotto [Zoltán Horváth] (40 points)

Shade some empty (non-circled) 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. For each given number, the total size of all black regions orthogonally adjacent to that number must match the number.

Answer: For each designated row, enter the length in cells of each of the shaded segments from left to right. Use only the last digit for two-digit numbers; e.g., use '0' for a segment of size 10. If there are no black cells in the row, enter a single digit '0'.

Example Answer: `2,11`



13. Fillomino (Cipher) [Zoltán Horváth] (74 points)

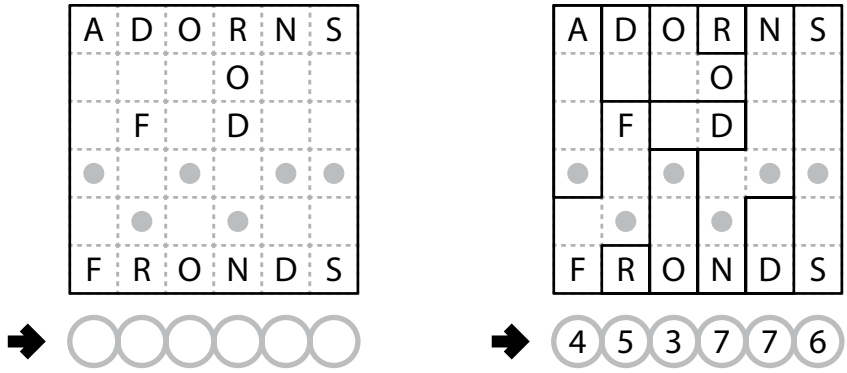
Divide the grid along the dotted lines into regions (called polyominoes) so that no two polyominoes with the same area share an edge. Inside some cells are numbers; each number must equal the area of the polyomino it belongs to. A polyomino may contain zero, one, or more of the given numbers. (It is possible to have a "hidden" polyomino: a polyomino without any of the given numbers. "Hidden" polyominoes may have any area, including a value not present in the starting grid, such as a 6 in a puzzle with only clues numbered 1-5.)

Numbers have been encoded to letters (distinct numbers map to distinct letters, and vice versa). The mapping of numbers to letters has *not* been supplied for you.

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

Answer: Enter the area of the polyomino 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 polyomino of size 10.

Example Answer: `453776`



14. Scrabble (2+ Crossings) [László Osvalt] (53 points)

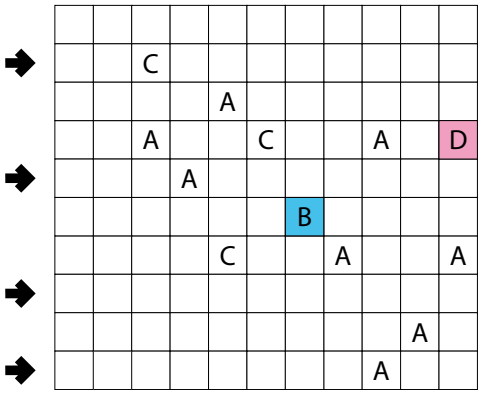
Put at most one letter into each cell so that the given words can be read either across (left-to-right) or down (top-to-bottom) in consecutive cells in the grid. Every word must appear in the grid exactly once, and no other words may appear in the grid (that is, if two cells are filled and are adjacent, 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. If a cell has a white background, then all instances of those letters are given. Letters in cells with a non-white background might have to be put in other empty cells.

Every word must intersect at least two other words.

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,SUDANMUO,UR,GA



AUSTRIA
CROATIA
CYPRUS
ECUADOR
GEORGIA
ICELAND
LUXEMBOURG
MOLDOVA
SPAIN
SUDAN

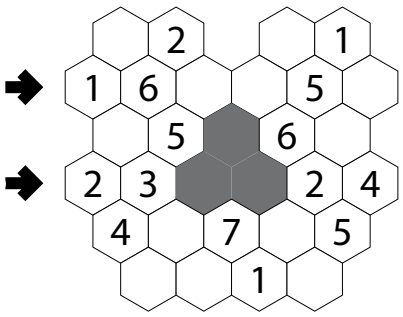


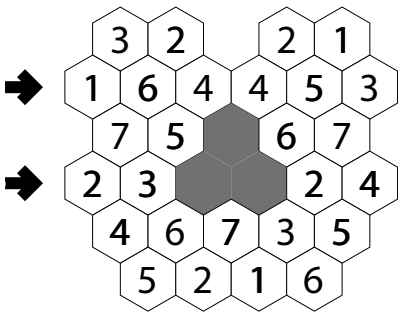
15. Hexa 7 [Zoltán Horváth] (55 points)

Place a number from 1 to 7 (integers only) into each cell. If two cells touch the same (numbered) cell, then they must contain different numbers. The grid may have some holes in it (marked in black); cells touching the same hole do not necessarily contain different numbers. Adjacent cells that do not touch a common cell do not necessarily contain different numbers.

Answer: For each designated row, enter its contents. Do not enter anything for holes.

Example Answer: 164453,2324





16. Yajilin [Zoltán Horváth] (78 points)

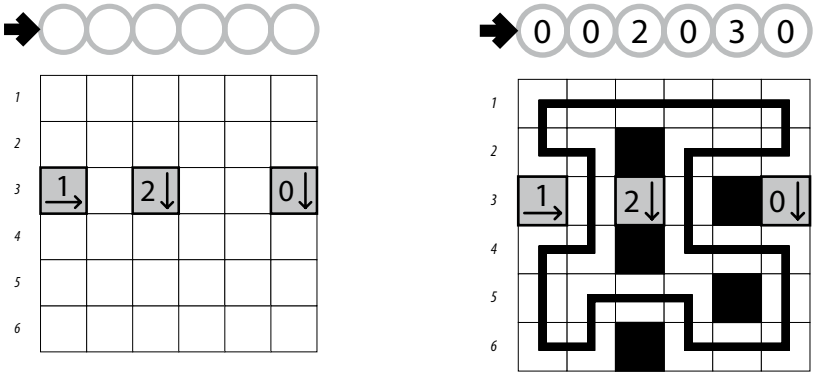
Blacken some white cells and then draw a single closed loop through all remaining white cells. The loop may not intersect itself, go through a cell corner, or go through a cell more than once. The loop must go through the center of every cell it goes through and all turns in the loop must be at cell centers. Blackened cells cannot share an edge with each other. Some cells are outlined and in gray and cannot be part of the loop. Numbered arrows in such cells indicate the total number of blackened cells along the direction of the arrow, starting in the arrowed cell and going along a row or column.

The competition puzzle grid is non-convex, which means that arrows can point to blackened cells beyond the grid edge as long as they are still lined up along the arrow's direction.

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

Answer: For each *column from left to right*, enter the *row* number of the *top*-most blackened cell. (Outlined gray cells are not blackened.) Use only the last digit for two-digit numbers; e.g., use '0' for row 10. If none of the cells in a column are blackened, enter '0' for that column.

Example Answer: 002030



17. Hex Islands [Victor Samu] (80 points)

Shade some empty cells black so that the black cells form the provided shapes. Each shape is used exactly once and can be rotated but *not* reflected. Shapes cannot touch along edges. The cells are separated into several "islands"; each island has several rows that go along three different directions, and each row can be potentially pointed at from the two locations outside either end of the row. Some of these locations are marked with arrows. The arrows point at the rows that contain the most shaded cells when compared to the other rows that could be pointed at from that location. (If there are multiple rows that have the most shaded cells, then all such arrows are given). A dot at a location means that no arrow information is given. (Note that locations do not look past islands to see other islands beyond the immediately adjacent island.)

The letters for the shapes, as will be provided in the diagram, are only used for entering your answer.

Answer: For each designated row, enter the letter for each shape that appears in that row, from left to right. For purposes of this answer, rows can go through multiple islands. Within a row, if a shape occupies more than one cell, only enter that shape's letter once. If there are no shapes in that row, enter a single letter 'X'.

Example Answer: X,IC,I

