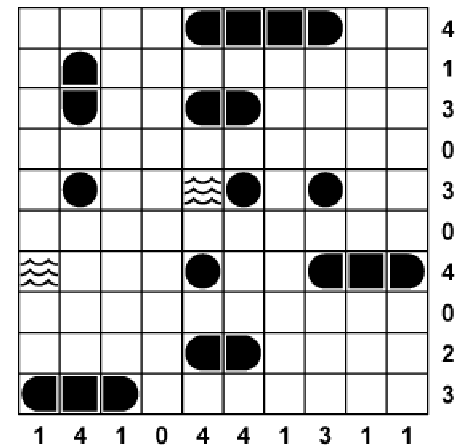
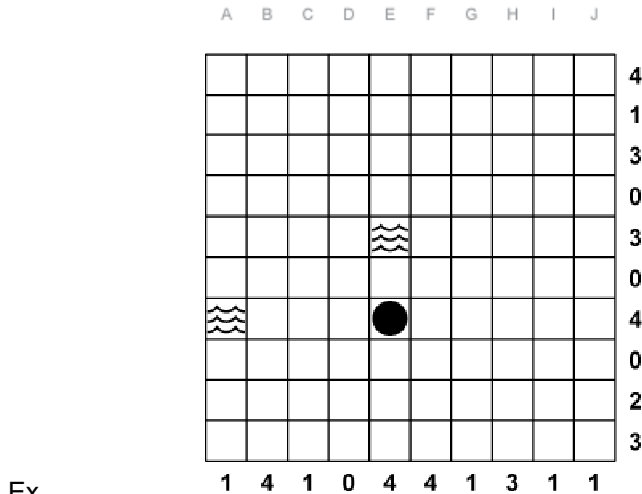
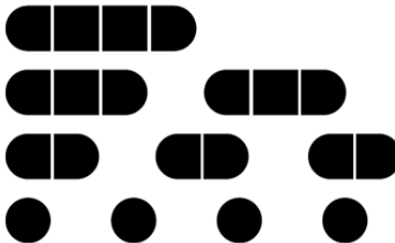


1. Battleships (Moshe Rubin) - 5 points

Locate the position of the 10-ship fleet in the grid. Each segment of a ship occupies a single cell. Ships are oriented either horizontally or vertically, cannot cover cells with water, and do not touch each other, not even diagonally. The numbers on the right and bottom edges of the grid reveal the total number of ship segments that appear in the corresponding row or column.



[diagram]



Answer: For each row, from top to bottom, enter the letter corresponding to the left-most column where a ship segment appears. Enter "X" for an empty row. (For the Example, the answer would be EBBXBXEXEA.)

2. Sudoku (Nikoli) – 10 points

Place the digits 1 through 9 into the empty squares (one per square) so that each digit appears exactly once in each of the following regions: the nine rows, the nine columns, and the nine outlined 3x3 regions.

A →

B →

Ex.

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

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

[diagram]

Answer: For the indicated rows (6th and 7th), enter the digits from left to right. Separate each row by a comma or space. (For the Example, the answer would be 982351467,421768593.)

3. Bag (Nikoli) - 5 points

Draw a bag (single closed loop) along the grid lines so that all the numbered squares are inside the bag. Additionally, each number equals the count of *interior* squares that are directly in line (horizontally and vertically) with that number's square, including the square itself.

A →

B →

Ex.

		5	3		
					3
9					7
5					
			4	2	

		5	3		
					3
9					7
5					
			4	2	

[diagram]

Answer: For the indicated rows (2nd, 5th, and 10th), enter the widths of each group of cells *inside* the bag, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 21,11.)

4. Spot'd Differences (Serhiy Grabarchuk) – 10 points

Find exactly six spots that are different between the two figures, ignoring unknown rotation (and any subtle differences due to graphic anomalies or overall distortion). A single difference will be a change in *both* size and color.



Ex. (two spots)

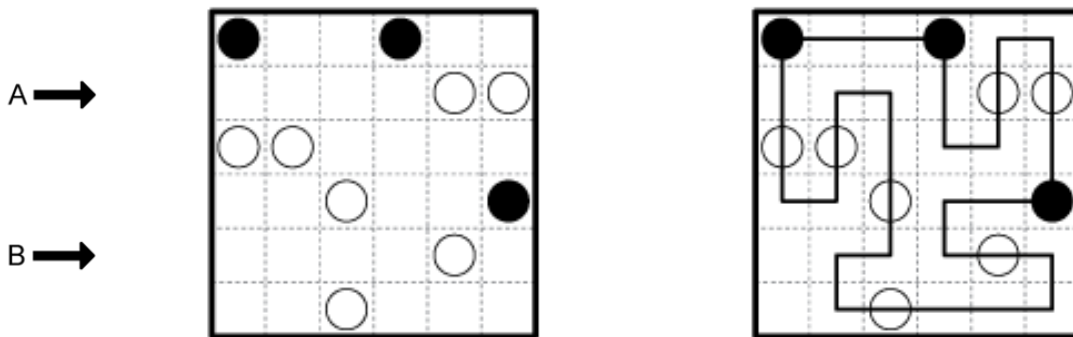
[diagram]

[diagram]

Answer: Enter the coordinates in the first figure for all six changes, separated by commas; use row-letter and position in the row, with 1 for the left-most spot. (For the Example, the answer would be A1,C3.)

5. Masyu (Nikoli) - 5 points

Find a single closed loop passing through each of the black and white circles. The loop passes through the centers of adjacent squares. When passing through a black circle, the loop must make a 90 degree turn and extend at least two squares in both directions. When passing through a white circle, the loop must go straight and must make a 90 degree turn in at least one of the adjacent squares.



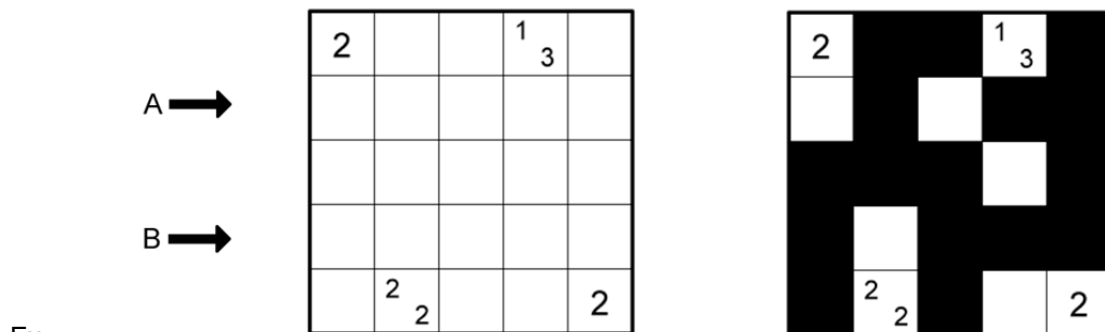
Ex.

[diagram]

Answer: For the indicated rows (4th, 7th, 11th, and 16th), enter the lengths of the horizontal path line segments, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 1,12.)

6. Tapa (Ashish Kumar) - 10 points

Paint some empty squares black to make a single network of paths, connecting squares vertically or horizontally, but never covering a 2x2 region. A square containing one or more numbers indicates the sizes of all groups of consecutively adjacent black squares, where multiple groups are separated by at least one white square and in no particular order.

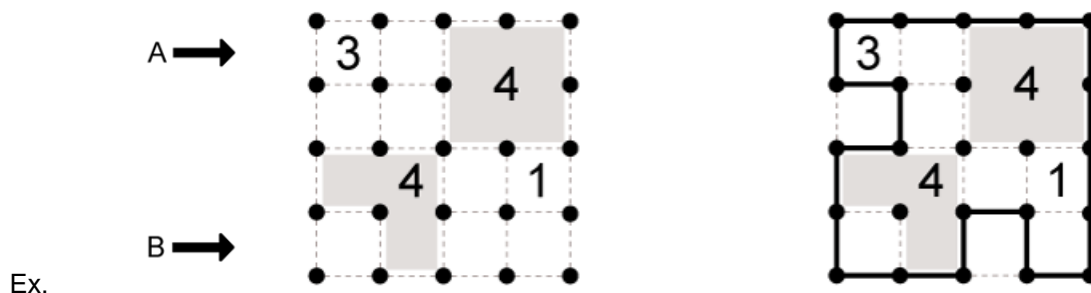


[diagram]

Answer: For the indicated rows (2nd, 5th, and 8th), enter the widths of each group of black squares, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 12,13.)

7. Regional Fences (Dave Tuller) - 10 points

Draw a single closed loop by connecting neighboring dots horizontally or vertically, but not diagonally or crossing the inside of a highlighted region. A numbered square or numbered highlighted region indicates exactly how many of its edge segments are used by the loop.

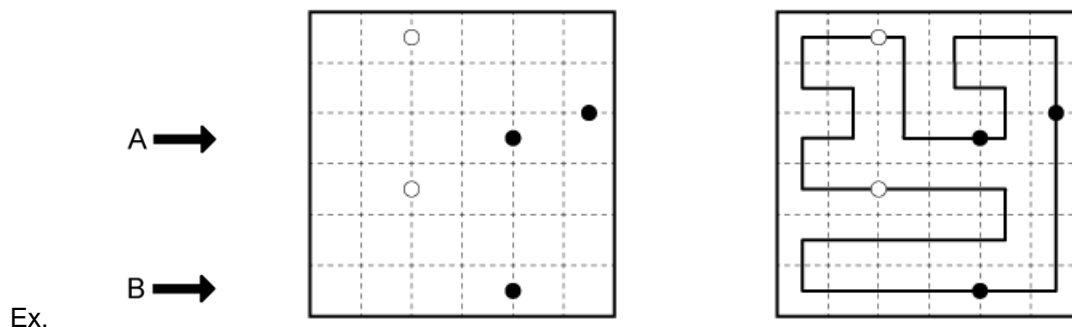


[diagram]

Answer: For the indicated rows (2nd, 4th, 7th, and 10th), enter the number of cells in each contiguous segment of cells *inside* the loop, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 4,21.)

8. Kropki Loop (Ashish Kumar) - 10 points

Draw a single closed loop that passes vertically and horizontally through all cells and through all of the given dots. When passing through a white dot, the number of cells on one side of the dot before turning must differ by 1 from the number of cells on the other side before turning. When passing through a black dot, the number of cells on one side of the dot before turning must be twice the number of cells on the other side before turning. (If a straight loop segment passes through two or more dots, ignore the other dots when counting cells.) Not all possible dots are marked.

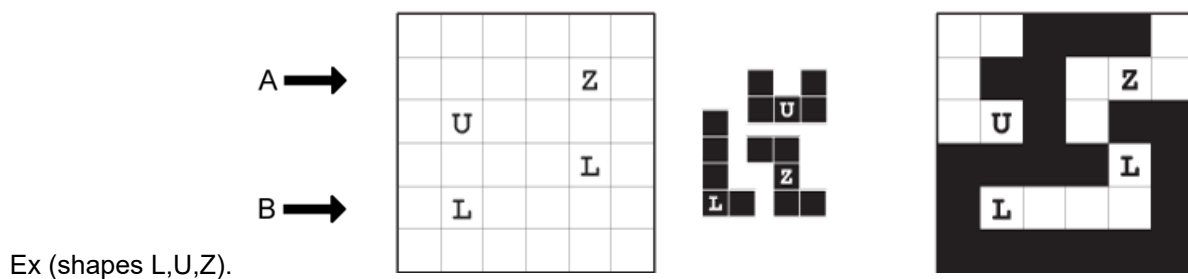


[diagram]

Answer: For the indicated rows (2nd, 4th, 7th, and 9th), enter the lengths of the horizontal path line segments, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 12,5.)

9. Penta Nurikabe (Serkan Yürekli) – 10 points

Shade some empty cells black so that the grid is divided into 12 white areas, each corresponding to a different pentomino. (Pentominoes may be rotated or reflected, and may only touch diagonally at a point.) If a pentomino contains one or more letters, all such letters correspond to the pentomino shape. All black cells must be connected with each other, but no 2×2 group of cells can be entirely shaded black.



[diagram]

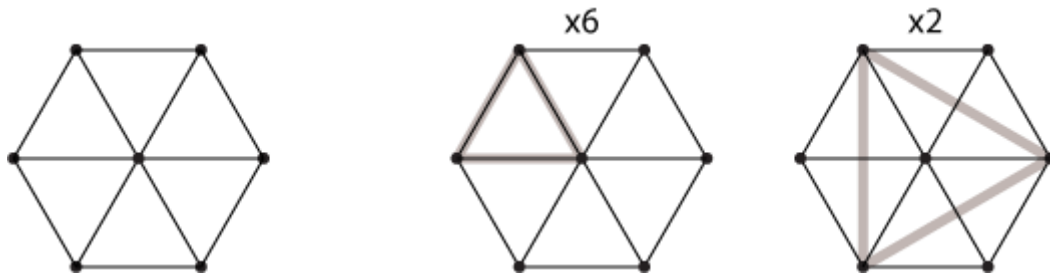
Answer: For the indicated rows (3rd, 7th, and 11th), enter the widths of each group of black squares, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 2,11.)

10. Triangular Count (Serhiy Grabarchuk) - 10 points;

penalty: -5 points if incorrect count is too high or more than three too low

Count the number of equilateral triangles that can be formed by connecting any three vertices in the diagram (the given lines need not be used, and are provided only to form regular polygons that indicate the diagram's shape).

Ex.



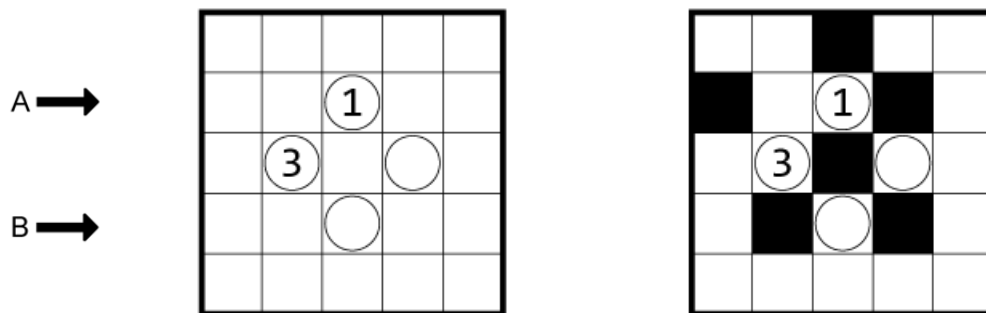
[diagram]

Answer: Enter the number of distinct triangles. (For the Example, the answer would be 8.)

11. Oasis (Ashish Kumar) – 10 points

Shade some empty cells in the grid. Shaded cells cannot touch each other orthogonally. All unshaded cells must be orthogonally interconnected, and cannot form a 2×2 square. A numbered circle indicates how many other circles can be reached from that cell by passing only orthogonally through empty unshaded cells (it cannot pass through shaded cell or a cell with a circle).

Ex.

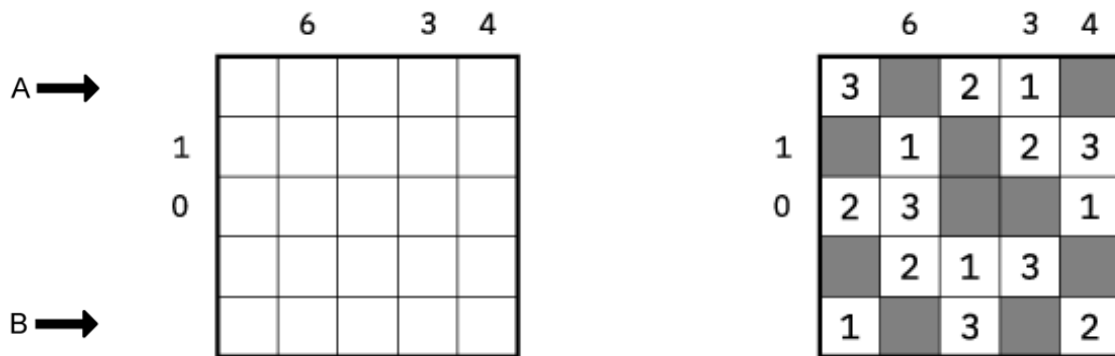


[diagram]

Answer: For the indicated rows (2nd, 5th, and 10th), enter the number of cells in each contiguous segment of *unshaded* cells, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 21,111.)

12. Smashed Sums (Michael Tang) – 15 points

Fill each row and column of the grid with the digits 1 through 6 and blacken the remaining two cells, so that the numbers outside the grid are equal to the sum of the digits between the two black cells in the corresponding row or column.



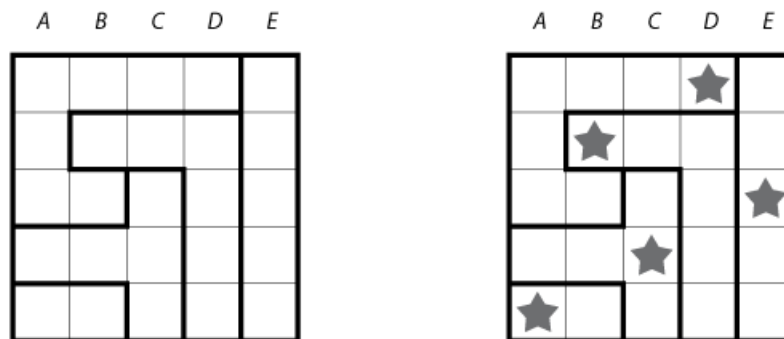
Ex.(1-3)

[diagram]

Answer: For the indicated rows (2nd and 7th), enter the values in each cell ("X" for black cells), from left to right. (For the Example, the answer would be 3X21X,1X3X2.)

13. Star Battle (Ashish Kumar) - 15 points

Place a star in some cells so that two stars appear in each row, column, and outlined region. Cells containing stars cannot touch each other, not even diagonally.



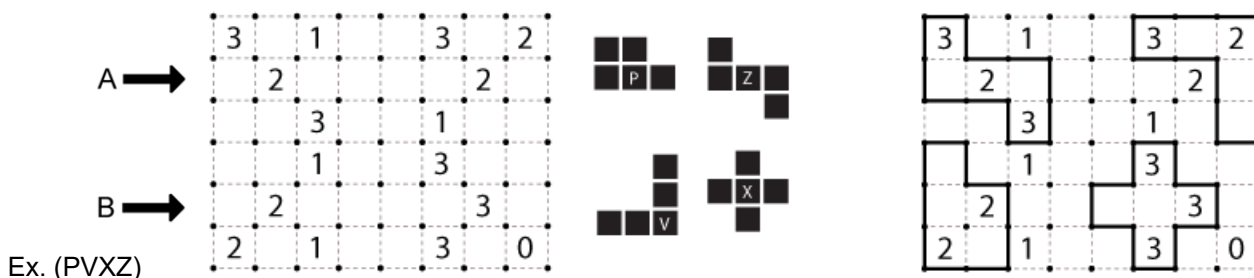
Ex (one star).

[diagram]

Answer: For each row, from top to bottom, enter the letter corresponding to the column of the left-most star. (For the Example, the answer would be DBECA.)

14. Penta Slitherlink (Serkan Yürekli) - 15 points

Draw a set of twelve pentomino-shaped loops, connecting neighboring dots horizontally or vertically. A numbered square indicates exactly how many of its edge segments are used by the loops. The pentomino-shaped loops cannot touch each other, not even diagonally, but may be rotated or reflected.

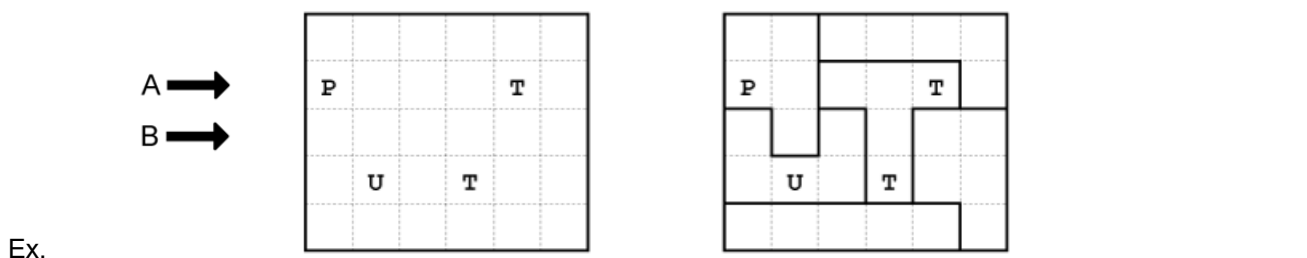


[diagram]

Answer: For the indicated rows (2nd, 6th, and 10th), enter the letters corresponding to each of the cells *inside* the pentominoes, from left to right. Separate each row by a comma or space. (For the Example, the answer would be ZZZV,PPXXX).

15. Pentominous (Grant Fikes) - 15 points

Divide the grid into pentominoes so that no two pentominoes of the same shape (ignoring rotation or reflection) share an edge. A cell containing a given letter must be part of a pentomino shape associated with that letter. An inventory of pentominoes is given below, but not all shapes are necessarily used.



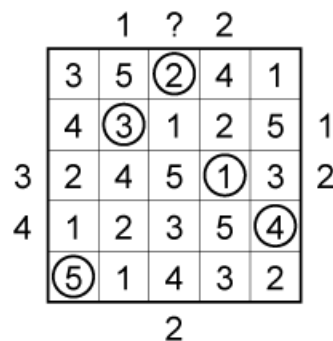
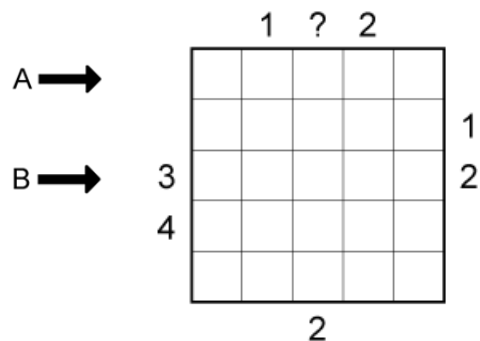
[diagram]

Answer: For the indicated rows (6th and 13th), enter the letter corresponding the pentomino shapes, as they appear in order from left to right. Separate each row by a comma or space. (For the Example, the answer would be PTL,UPUTP.)

16. Skyscrapers with Searchlights (Craig Kasper) - 15 points

Place a digit from 1 through 6 into each cell so that no digit repeats in any row or column. Each number inside the grid represents the height of a building and the clues outside the grid indicate how many buildings can be "seen" when looking from that direction; taller buildings block the view of shorter buildings.

Additionally, each row and column of the grid has one building with a searchlight on top, and each of these six buildings has a different height. If a building with a searchlight can be "seen" in the direction of an outside clue, then the corresponding clue number is obscured and replaced by a "?".

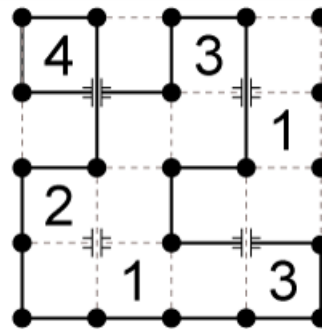
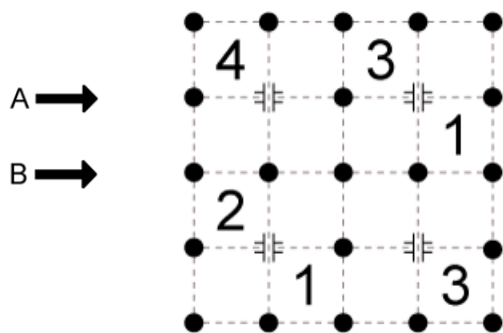


[diagram]

Answer: For the indicated rows (2nd and 5th), enter the digits from left to right. Separate each row by a comma or space. (For the Example, the answer would be 35241,24513.)

17. Double-Cross Slitherlink (Adam R. Wood) - 15 points

Draw a single closed loop by connecting neighboring dots horizontally or vertically, or by connecting dots on opposite ends of a crossing. A numbered square indicates exactly how many of its edge segments are used by the loop.

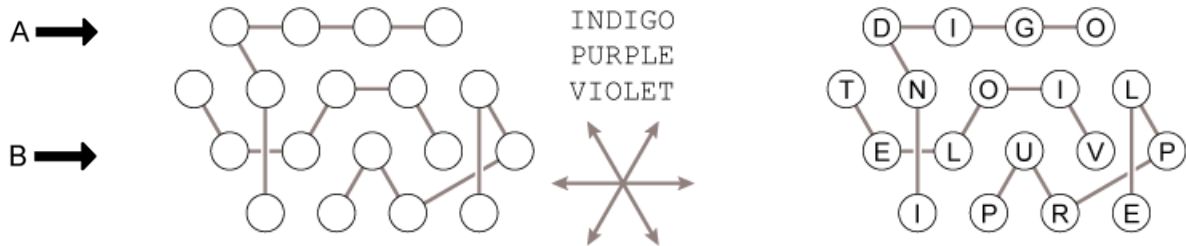


[diagram]

Answer: For the indicated rows of dots (1st, 4th, 9th, and 12th), enter the length of each path segment, from left to right. Separate each row by a comma or space. (For the Example, the answer would be 2,11.)

18. Winner's Circle (Serkan Yürekli) - 20 points

Enter the given names (including punctuation) into the grid, one name per thread, with characters in order one per cell. No letter can appear more than once in any of the three indicated triangular directions.



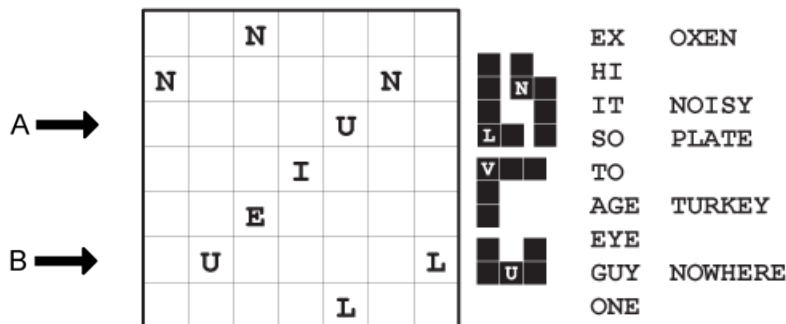
Ex.

[diagram]
[word list]

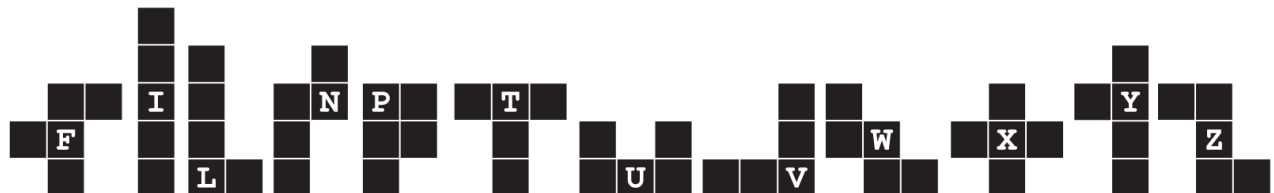
Answer: For the indicated rows (2nd, 5th, and 8th), enter the letters, from left to right. Separate each row by a comma or space. (For the Example, the answer would be DIGO,ELUVP)

19. Penta Crisscross (Serkan Yürekli) - 20 points

Locate the given words in the grid, reading across or down. All words are interconnected and no words are formed that are not in the given list. All cells that are not used by the words should form the full pentomino set. Pentominoes may be rotated or reflected but cannot touch each other, not even diagonally. The given letters inside the grid are either part of the words, or unused and part of the pentomino with the corresponding shape.



Ex.

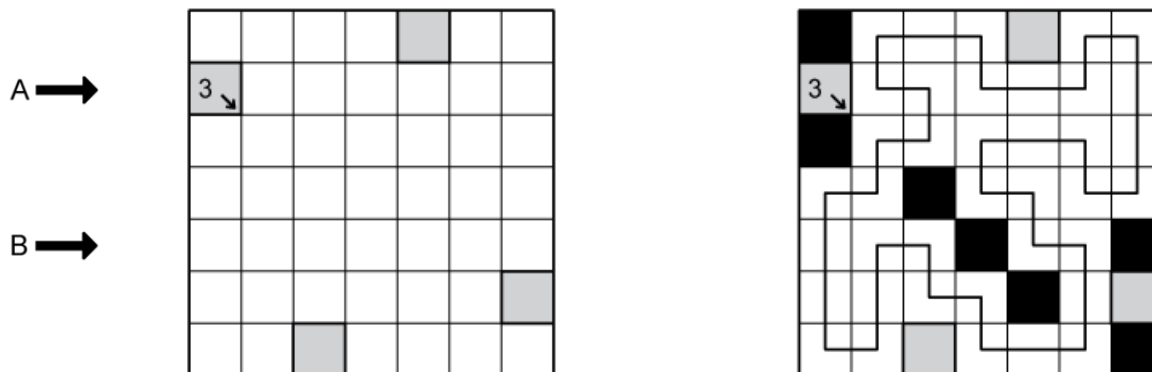


[diagram]
[word list]

Answer: For the indicated rows (3rd, 7th, and 11th), enter the crisscross letters, from left to right. Separate each row by a comma or space. (For the Example, the answer would be PWO,TURKEY)

20. Compass Yajilin (John Bulten) – 15 points

Blacken some white cells and then draw a single closed loop (without intersections or crossings) through all remaining white cells. 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 indicate the total number of blackened cells in the corresponding direction (which may be orthogonal or diagonal).



Ex.

[diagram]

Answer: For the indicated rows (4th, 7th, 10th, and 13th), enter the lengths of the horizontal loop segments, from left to right. (For the Example, the answer would be 12,11.)

21. Crsiscross Pzuzle (Craig Kasper) - 25 points

Enter the given words and phrases (ignore spaces) into the crisscross grid, across or down, one letter per cell. For each entry, two (different) adjacent letters must be swapped.



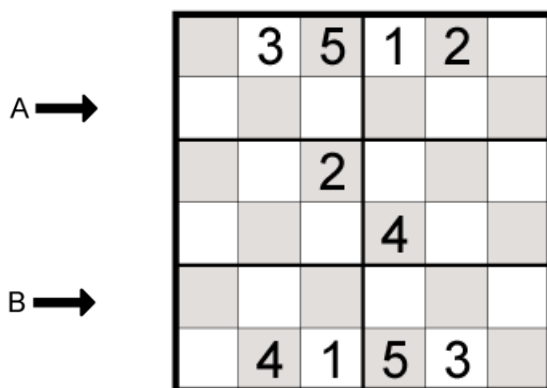
Ex.

[diagram]
[word list]

Answer: For the indicated rows (3rd, 7th, and 9th), enter the letters, from left to right. Separate each row by a comma or space. (For the Example, the answer would be OB,VCITOR.)

22. Odd-Angle Sudoku (Adam R. Wood) – 20 points

Place the digits 1 through 9 into the empty squares (one per square) so that each digit appears exactly once in each of the following regions: the nine rows, the nine columns, and the nine outlined 3x3 regions. Additionally, no *odd digit* appears more than once in any diagonal of any length. (The grid is checkered for your convenience.)



Ex.

6	3	5	1	2	4
1	2	4	3	6	5
4	5	2	6	1	3
3	1	6	4	5	2
5	6	3	2	4	1
2	4	1	5	3	6

[diagram]

Answer: For the indicated rows (5th and 8th), enter the digits from left to right. Separate each row by a comma or space. (For the Example, the answer would be 124365,563241.)

END OF TEST
