WPC French Qualifier 2009 – Instructions

Timetable

Part	Beginning	End	Maximum points
Part I	10.30	11.30	600 points
Part II	11.40	12.30	500 points
Part III	12.40	13.00	200 points
Part IV	14.20	16.20	1200 points
Part V	16.35	17.25	500 points
Part VI	17.40	18.20	400 points

General rules

In any part, a puzzler who submits correct answers to all puzzles before the end will receive a bonus of 5 points for each remaining full minute.

The jury will apply the *Nick Baxter*'s paradigms: "If your notations are clear enough for you to double-check your puzzles, we'll be able to figure it out too," and "Being fair to the contestants [is obtained] by measuring their solving skills, and not unduly penalizing their data entry skills."

In particular, these rules apply when a puzzle contains symbols that are difficult to reproduce quickly. Then, any symbol/letter (as long as it is used consistently through the whole puzzle without ambiguity) can be used instead of the complicated symbol.

Part I – 60 minutes – 600 points + time bonus

In this part, the scoring is as follows:

- 15 points for each of the first 10 solved puzzles,
- 20 points for each of the next 10 solved puzzles,
- 25 points for each of the last 10 solved puzzles.

The number of puzzles of each sort is indicated after the name of the puzzle.

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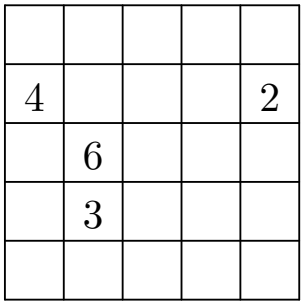
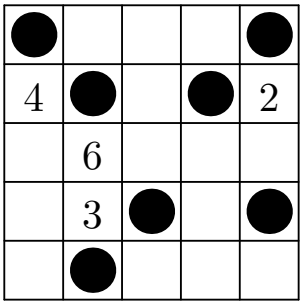
1. Alhambra (x2)

The grid represents a dwarf hall. Find the position of round pillars of width 1 given that two pillars cannot touch each other horizontally or vertically and that the hints represent the number of visible cells (horizontally and vertically, including themselves) from their position. All cells without a pillar are connected, horizontally or vertically. No pillar can be put on a hint.

Example:



Solution:



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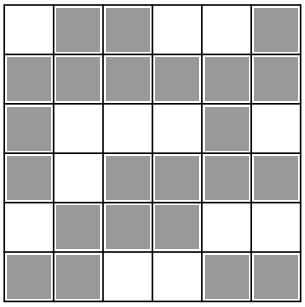
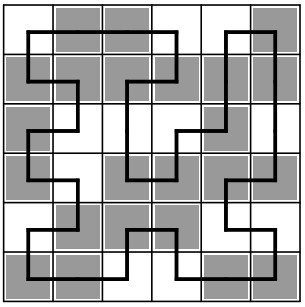
2. Cabotage (x3)

The grid represents islands (white cells) and sea (grey cells) between the islands. Find the loop made by a boat, going through each square exactly once, so that it never travels through three sea cells consecutively.

Example:



Solution:



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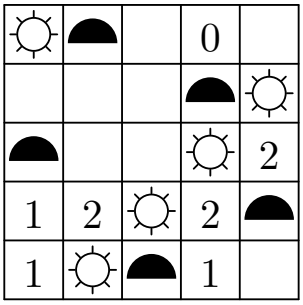
3. Clouded Weather (x2)

Each row and column contains one sun and one cloud, never positioned on figures. The hints indicate how many suns are seen, horizontally and vertically from the hint: a sun is seen from a square if there isn't a cloud in between.

Example:

			0	
				2
1	2		2	
1			1	

Solution:



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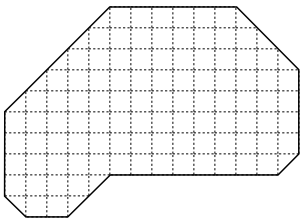
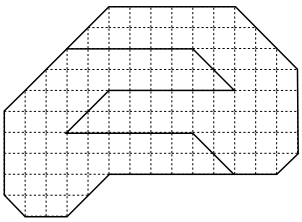
4. Cut (x2)

Divide the first (resp. second) grid into two (resp. three) superimposed parts (up to rotation and/or symmetry).

Example: (two pieces)



Solution:



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5. Eels (x3)

The grid represents a square lake occupied by eels swimming horizontally or vertically from the middle of each cell to the next one. The X symbols indicate either the beginning or the end of the path of an eel. Each cell is used by exactly one path of one eel.

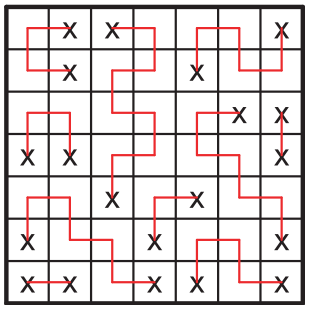
An eel never goes straight ahead: there cannot be any straight segment of length strictly greater than 1 is an ell's path.

Find the paths of all eels hidden in the grid.

Example:

	X	X				X
	X			X		
					X	X
X	X					X
		X		X		
X			X			X
X	X		X	X		X

Solution:



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6. Fuzuli (x2)

Fill some cells of the grid with numbers from 1 to 4 (1 to 5 in the second grid) so that in every row and in every column each digit appears exactly once. There cannot be any 2x2 square of filled-in cells anywhere in the grid. The black cells cannot contain any number.

Example (1-3):

			2	3
		2		
3	1			
			3	
2				

Solution:

1			2	3
	3	2	1	
3	1			2
	2	1	3	
2		3		1

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7. H2O (x2)

There are water molecules composed of two H (hydrogens) and one O (oxygen) in the grid. The O shall be next (horizontally or vertically) to each corresponding H. Locate the position of the O, given that no two O can touch each other, not even diagonally.

Example:

	H			H			H
H	H		H		H	H	
H		H		H		H	H
	H		H	H			
H			H				H
			H			H	
H							H
H		H	H	H		H	

Solution:

O	H			H	O		H
H	H	O	H		H	H	O
H		H		H	O	H	H
O	H	O	H	H			O
H			H	O			H
O			H			H	O
H			O				H
H	O	H	H	H	O	H	

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8. Incorrect Latin square (x3)

A Latin square (each number from 1 to 6 (or 7) on each row and column) was originally drawn on the grid. Then some values, not touching each other by the side, were changed. Rebuild the original grid.

Example:

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

Solution:

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

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9. Roller Coaster (x2)

Fill the grid with the numbers from 1 to 6, each once in each row and column. Comparing each number horizontally to its (at most) two neighbours, it is either smaller than both of them or greater than both of them. The same property holds vertically.

Example:

				3	
4					
	4	3	6	1	
	1			6	
			4		
			2		

Solution:

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

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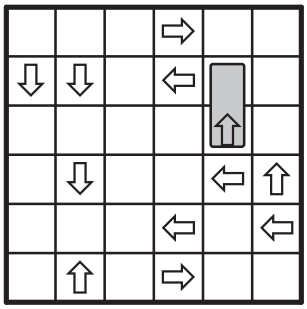
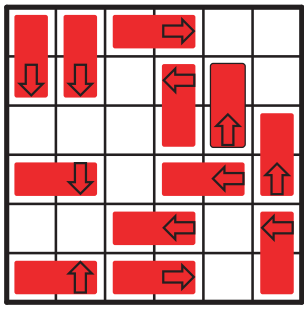
10. Sliding Dominoes (x3)

Locate dominoes (blocks 1x2) in the grid, so that: each domino contains exactly one arrow, and the domino can slide along the direction of its arrow.

Example:



Solution:



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11. Sum of the First Seen (x3)

Place the numbers 1, 2, and 3, (and 1 to 4 in the third grid) in the grid so that in every row and column, each number appears exactly once. The hints outside the grid indicate the sum of the digits forming the first sequence seen from that direction.

Example:

						3
5						
3						2
		3		2		

Solution:

	1	2			3	3
			3	2	1	
5	2	3		1		
3	3		1		2	2
		1	2	3		
			3		2	

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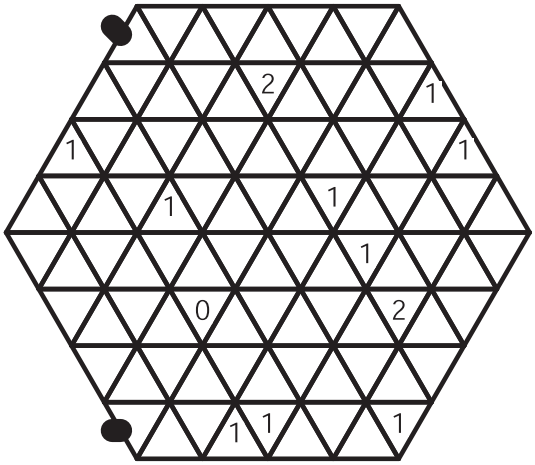
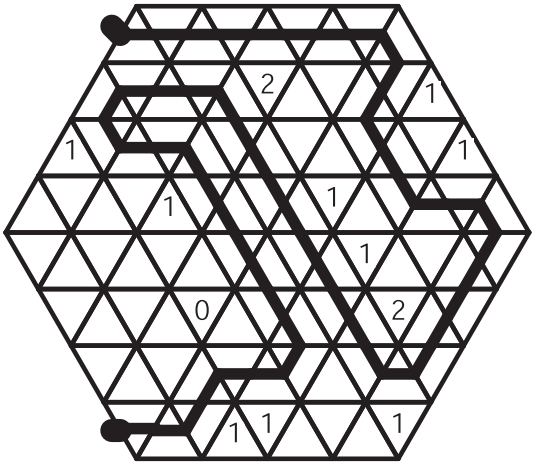
12. Worms (x3)

A worm, whose head and tail are given, has worked his way through the hexagonal grid, going from one triangle to a neigbouring triangle by the side. Some triangles contain a hint, indicating how many of its neighbouring cells (by the side) were on the worm's path. The worm didn't pass through the hints. Rebuild its path.

Example:



Solution:



Part II – 50 minutes – 500 points + time bonus

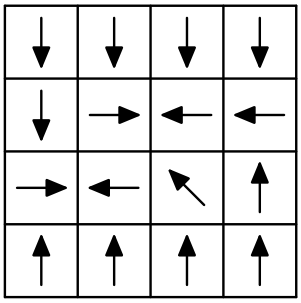
1. Alhambra (60+60 points)

See Puzzle I.1.

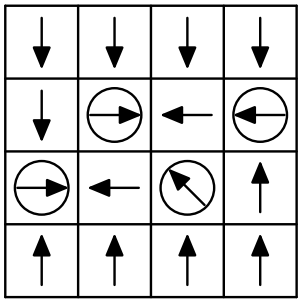
2. Arrows (30+40+40+50 points)

Circle some arrows so that each arrow (circled or not) points to exactly one circled arrow.

Example:



Solution:



3. Clouded Weather (40+50 points)

See Puzzle I.3.

4. Roller Coaster (40+40 points)

See Puzzle I.9.

5. Sum of the First Seen (50 points)

See Puzzle I.11.

Part III – 20 minutes – 200 points + time bonus

In this part, there are 4 puzzles of each type. The scoring is as follows:

- 5 points for each of the first 16 solved puzzles,
- 10 points for each of the next 12 solved puzzles.

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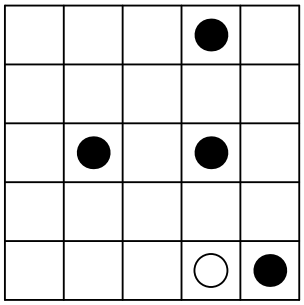
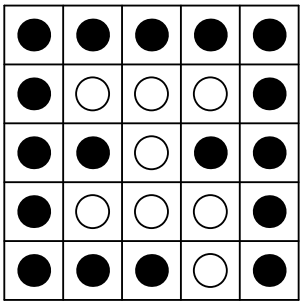
1. Black and White

Fill each square with either a black or a white circle. All the squares containing black circles must be connected to each other horizontally or vertically. Similarly, all the squares containing white circles must be connected to each other horizontally or vertically. No 2x2 region can contain four circles of the same color.

Example:



Solution:



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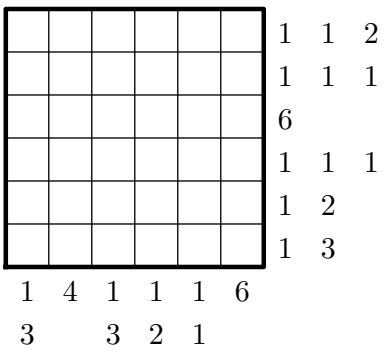
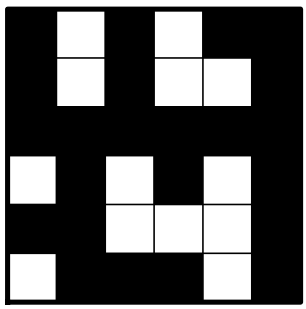
2. Coral Finder

Select a connected set of squares (the coral) so that it does not touch itself, not even diagonally. Numbers outside the grid indicate the lengths of consecutive parts of the coral in the given row or column. However, these numbers are not necessarily written in the order they appear in their respective row or column. No 2x2 area can be covered by the coral.

Example:



Solution:



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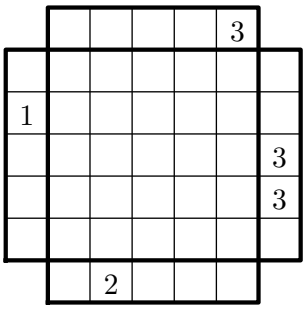
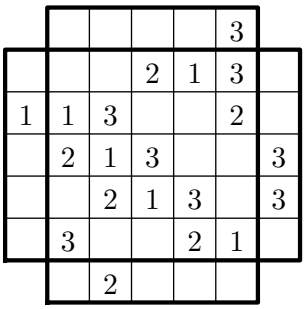
3. End View

Place the numbers 1, 2, and 3 in the grid so that in every horizontal and vertical line, each number appears exactly once. The hints outside the grid indicate the first number seen from that direction.

Example:



Solution:



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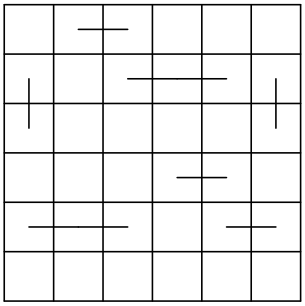
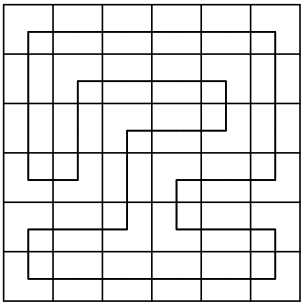
4. Loopfinder

Draw a continuous loop formed by straight line segments connecting the centers of adjacent squares. The loop must not cross or overlap itself, and must visit all squares. Some parts of the loop are already given.

Example:



Solution:



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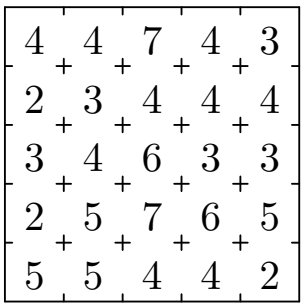
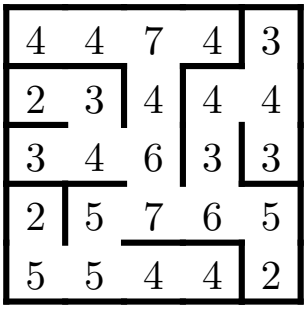
5. Museum

The floor indicated by a grid is divided in rooms, all interconnected by doors. Some doors are opened, the others are closed. Each room displays a number which indicates how many rooms (including itself) can be seen from it. Draw the closed doors.

Example:



Solution:



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6. Skyscrapers

The grid symbolizes a group of skyscrapers. Each row and column contains skyscrapers of different heights (1-4). The numbers outside the grid indicate how many skyscrapers are visible from that direction (a building located behind a taller one in the same row is completely hidden).

Example:

		3	1	4	

Solution:

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

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7. Sudoku

Fill the grid with numbers from 1 to 6 so that every row, column, and 2x3 block contains different digits.

Example:

			4		
2			6		
		5			3
					2
3		4			
5					

Solution:

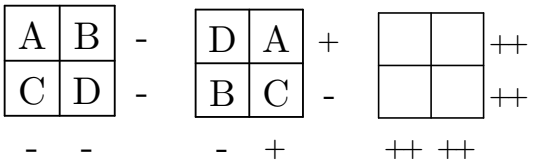
6	5	3	4	2	1
2	4	1	6	3	5
4	2	5	1	6	3
1	3	6	5	4	2
3	1	4	2	5	6
5	6	2	3	1	4

Part IV – 120 minutes – 1200 points + time bonus

1. 2D Mastermind (30 points)

Place each number from 1 to 9 in a 3x3 grid, so that the number of + signs of a row/column indicates the number of digits of that row that are in the correct position; the number of - signs of a row/column indicates how many other digits are in this row/column, but in the wrong position.

Example (with A, B, C, D):



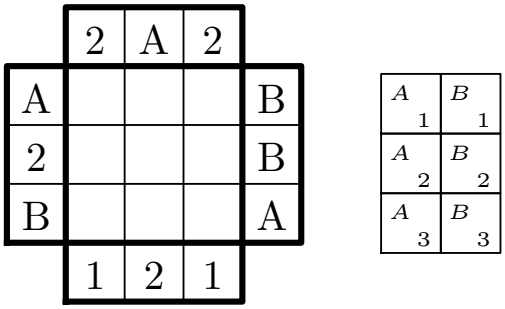
Solution:

C	A
D	B

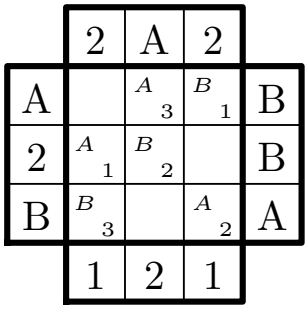
2. Easy as Skyscrapers (60 points)

Locate each number-letter pair in the grid so that no number or letter is repeated in a row or a column. Numbers represent the height of the building there. A letter outside the grid shows the first letter seen in that direction. A number outside the grid shows the number of buildings seen from that direction.

Example:



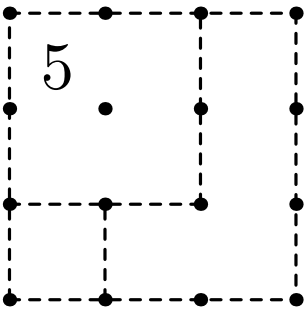
Solution:



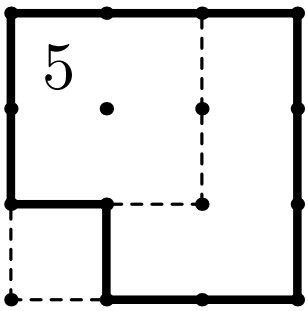
3. Fencing Numbers (60 points)

Draw a single closed loop in the grid along the represented unit segments. The digits in the grid indicate the number of unit segments one must draw around their corresponding region.

Example:



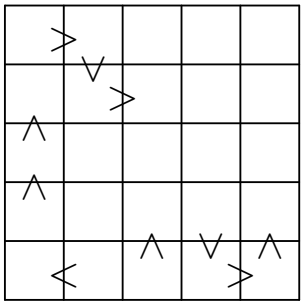
Solution:



4. Futoshiki (50 points)

Fill in the grid with the numbers from 1 to 6. Each row and column must contain these numbers exactly once. All comparison signs must be true.

Example:



Solution:

5	> 4	2	1	3
2	3 >	1	4	5
∧ 3	1	5	2	4
∧ 4	2	3	5	1
1	< 5	∧ 4	∨ 3	> ∧ 2

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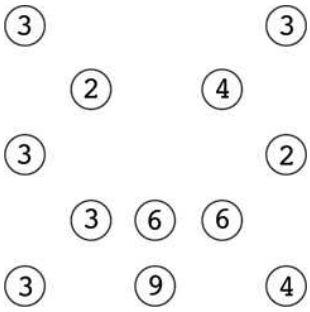
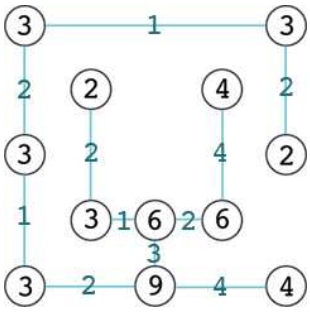
5. Hashiwakakuro (40+70 points)

Link the islands on the grid with vertical and horizontal bridges so that all islands are connected to each other. Each bridge between two islands must have between 1 and 4 (1 and 5 in the second grid) lanes. The sum of the number of lanes leading off an island is equal to the number on this island. For any island, the number of lanes going in each direction must be different.

Example (with 1-4 lanes):



Solution:



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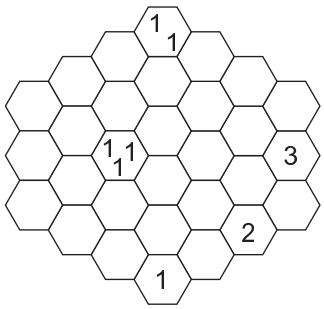
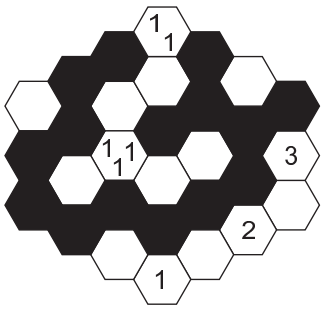
6. Hexa Tapa (60 points)

Paint some cells black to create a continuous wall (without any closed loop). Number/s in a cell indicate the length of the black cell blocks on its neighbouring. If there is more than one number in a cell, there must be at least one white cell between the black cell blocks. Painted cells cannot form three hexagons meeting at a point. There are no wall segments on cells containing numbers.

Example:



Solution:



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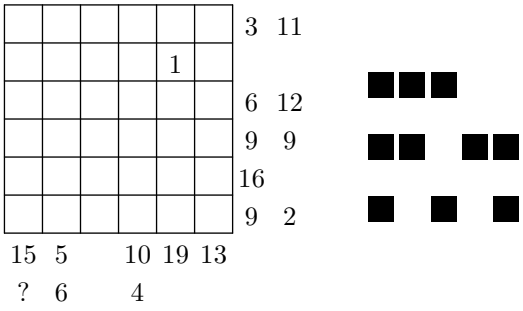
7. Japanese Battleships (40 points)

Fill the grid with numbers from 1 to 6. Numbers outside the grid indicate the sums of the numbers in the corresponding directions, in order. There must be at least one black square between the sums, and numbers cannot be repeated within one row/column.

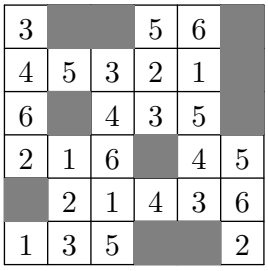
All black cells must form the required battleship fleet. The ships cannot touch each other, not even diagonally.

The sums on a given row/column are either all given (sometimes with a "?"), or not given at all.

Example:



Solution:



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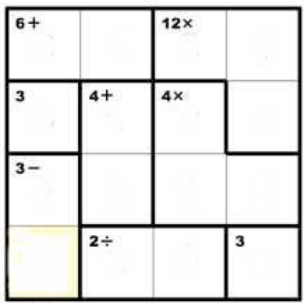
8. Ken Ken (40+70 points)

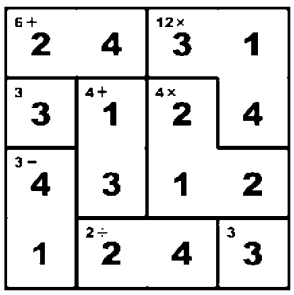
Fill in with the numbers from 1 to 6 *(seven different integers from 0 to 9 in the second grid)*. Do not repeat a number in any row or column. The numbers in each heavily outlined set of squares, called cages, must combine, in any order, to produce the target number in the top corner of the cage using the corresponding mathematical operation.

A number can be repeated within a cage as long as it is not in the same row or column.

Example (with numbers 1-4):



Solution:



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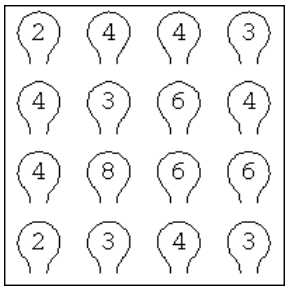
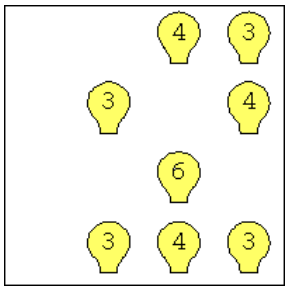
9. Light Bulbs (50 points)

A light bulb is on precisely when its corresponding number is the number of adjacent (horizontally, vertically, and diagonally) light bulbs, including itself, that are on. At least one light bulb is on. Paint the light bulbs that are on.

Example:



Solution:



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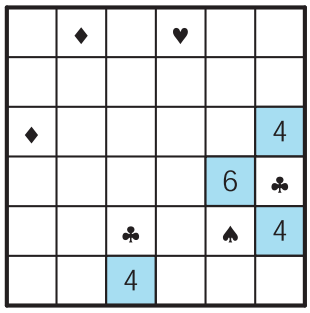
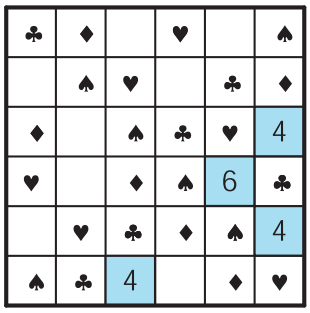
10. Magic Minesweeper (50+70 points)

Each row and column contains exactly once each suit of a card game (club, diamond, heart, and spade). There is no card on a hint and each hint indicates the number of neighbouring cells (including diagonals) containing a card.

Example:



Solution:



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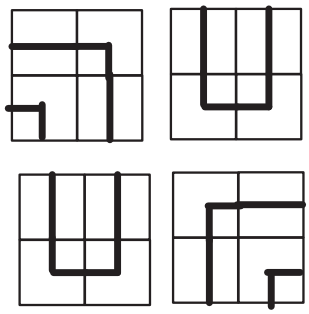
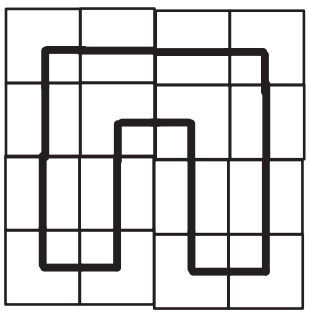
11. Puzzle (60 points)

Replace all 3x3 pieces in a 12x12 grid so that the whole picture represents a single closed loop going through each cell of the grid. The pieces cannot be rotated nor mirrored.

Example:



Solution:



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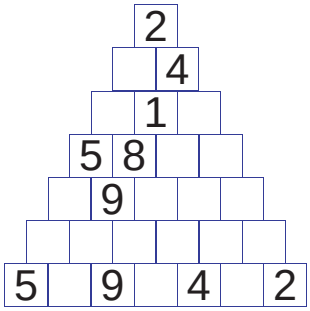
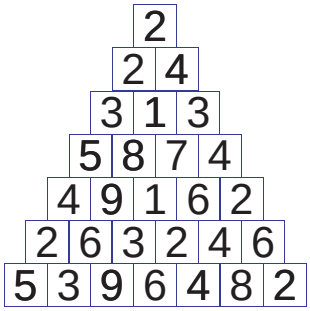
12. Pyramid (40 points)

Put numbers between 1 and 9 in each cell so that each cells contains a number that is either the sum or the difference of the two numbers below it. The bottom row must contain different numbers.

Example:



Solution:



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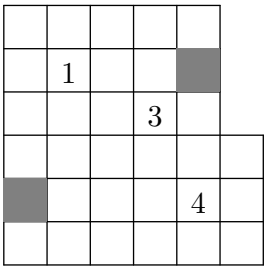
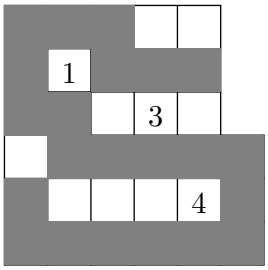
13. Snake Egg (45+65 points)

Locate a snake in the grid, whose head and tail are given, traveling only horizontally and vertically, that can touch itself only diagonally. The remaining cells must form seven different areas with sizes from 1 to 7 each, and one more with an unknown size. Numbers in the grid indicate the size of the area including that cell.

Example (4 zones +1):



Solution:



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14. Sum Skyscrapers (40 points)

The grid symbolizes a group of skyscrapers. In every row and column, skyscrapers are built with a different height (from 1 to 6). The numbers outside the grid indicate the sum of the heights of the visible skyscrapers from that direction (a building located behind a taller one in the same row is completely hidden).

Example:

	9	5	7	9	12	
6						12
8						9
11						5
5						11
9						6
	9	14	12	5	8	

Solution:

	9	5	7	9	12	
6	1	5	2	4	3	12
8	3	1	5	2	4	9
11	2	4	1	3	5	5
5	5	3	4	1	2	11
9	4	2	3	5	1	6
	9	14	12	5	8	

---

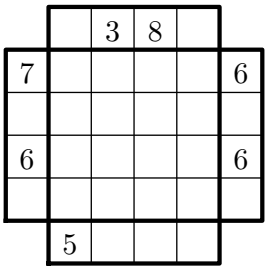
15. Sum Skyscrapers ± 1 (30+50 points)

The grid symbolises a group of skyscrapers. In every row and column, skyscrapers are built with each a different height (1 to 5 in the first grid, 1 to 6 in the second grid).

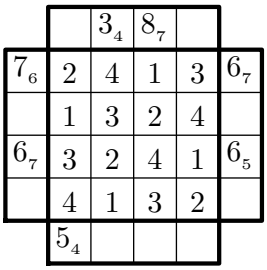
One can see a skyscraper only if all the skyscrapers in front of it are smaller.

The numbers outside the grid indicate either one more or one less than the sum of the heights of the visible skyscrapers from that direction.

Example:



Solution:



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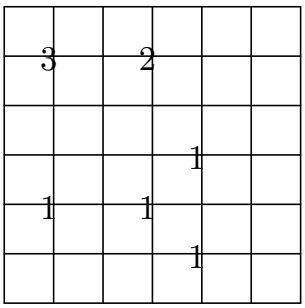
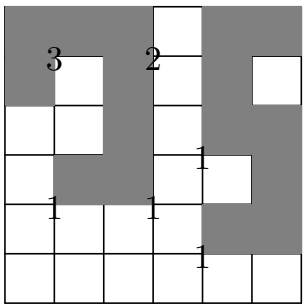
16. Tetroscope (60 points)

Place the given tetrominoes in the grid using each tetromino exactly once. Pieces can be rotated but not mirrored. Numbers in the grid indicate the amount of occupied cells in the neighbouring squares. Tetrominoes cannot touch each other, not even diagonally.

Example:



Solution:



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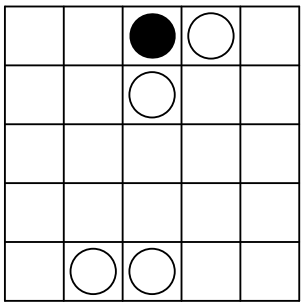
17. Total Masyu (30 points)

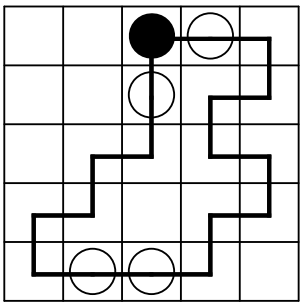
Draw a single closed loop in the grid. The loop must pass through each cell containing a white circle going straight ahead on it, with an immediate 90 degree turn one square away from the white circle on at least one of the two sides of the circle. The loop must pass through each black circle and make a 90 degree turn on it, extending at least two cells beyond the black circle before turning again.

All cells that obey either the white / black circle rules have been marked.

Example:



Solution:



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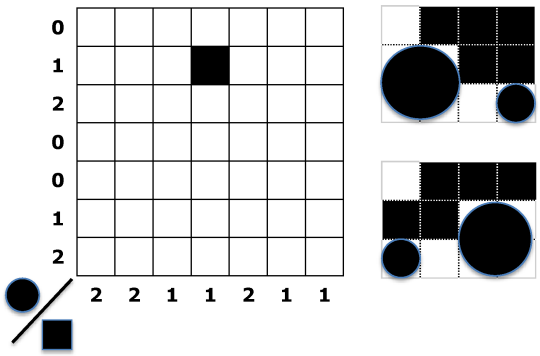
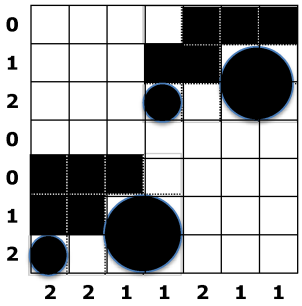
18. Tractors (40 points)

Draw the given tractors in the grid. Tractors can only be mirrored left-right. The numbers on the left of the grid indicate the number of wheels in the corresponding row. The numbers on the bottom of the grid indicate the number of black squares in the corresponding column. Each square containing any part of a tractor cannot touch any other square containing any part of another tractor, not even diagonally.

Example:



Solution:



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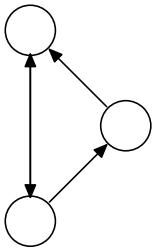
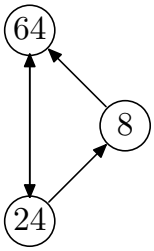
19. Tree product (50 points)

Place a different positive integer in each circle. Each number must be the product of all the digits of all the numbers pointing to it.

Example:



Solution:



Part V – 50 minutes – 500 points + time bonus

1. Briquet (100 points)

Locate 12 blocks in the diagram, each having the size 1x3, without touching each other from the side. These 12 blocks should contain all possible combinations of the numbers 1, 2 and 3. Half of the blocks should be horizontal and half should be vertical. Numbers in the diagram indicate the sum of the numbers touching their cell from the side.

Example (with 4 blocks 1-2):

		8		

Solution:

		1		
		2		
1	2	8	2	1
		2		
		1		

2. Japanese Battleships (90 points)

See Puzzle IV.7. The grid must be filled with numbers from 1 to 7.

3. Jumping Crossword (80 points)

Place the listed words into the grid. The words can jump over some squares, even the first or the last one, but never jump over two squares at once. The ”jumped” squares must be jumped over in the other way as well. The numbers indicate the length of the corresponding words, counting the ”jumped” cells.

Example:

Solution:

B	E	G		I		N
	A		A		I	O
A	R		B		A	R
T		H	E	E	N	D

7: BEGIN, THE END

4: AA, ABE, BAR, BAT
EAR, IAN, NORD

2: AR, E, G, IO

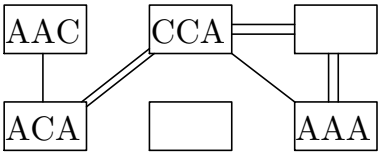
4. Total Masyu (100 points)

See puzzle IV.17.

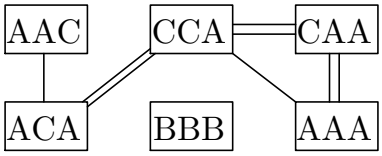
5. Triwords (130 points)

Each cell of a 5x5 grid contains a different sequence of length 3 built out of the three possible letters A, B, and C. Neighbouring cells (including the diagonal) are joined by as many lines as there are common letters in the same places of both sequences. Fill the grid.

Example:



Solution:



Part VI – 40 minutes – 400 points + time bonus

In all the puzzles of this part, some digits have been replaced by letters. The same letter always encodes the same digit. Different letters can encode the same digit and a letter can correspond to a digit written somewhere else in a grid.

In this part, the scoring is as follows:

- 15 points for each of the first 8 correct values,
- 20 points for each of the remaining correct values,
- 40 points for each fully solved puzzle.

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1. Hitori

Black out some of the numbers in the grid so that each row and each column contains only different digits. Black squares must not touch horizontally or vertically, and the remaining squares must all be connected to each other.

Example:

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

Solution:

1	5	2	4	3
■	1	■	2	■
2	4	1	3	5
■	3	4	■	2
4	2	3	5	■

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2. Skyscrapers

See Puzzle III.6. The heights of the skyscrapers go from 1 to 5.

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3. Sudoku

See Puzzle III.7. The grid must be filled by numbers from 1 to 9.
