

France/Belgium WPC Qualifying Test 2011 – Instructions

Sunday March 27, 2011

Schedule

10:45–11:30	Part 1 - Warmup	45 minutes	240 points
11:40–12:35	Part 2 - Swimming	55 minutes	280 points
13:45–14:35	Part 3 - Biking	50 minutes	250 points
14:45–16:35	Part 4 - Long-distance running	110 minutes	560 points
16:45–17:10	Part 5 - Sprint to the finish line	25 minutes	115 points

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



France/Belgium WPC Qualifying Test 2011 – Instructions

Part 1 – Warmup – 45 minutes – 240 points + time bonus

A competitor who submits correct answers to all puzzles before the end of the round will receive a bonus of 5 points for each remaining full minute.

1. Minesweeper

(8+8 points)

There are 25 mines hidden in the diagram, at most one in a given square. The numbers inside the diagram indicate the number of mines that can be found in the squares immediately adjacent to that square (horizontally, vertically, or diagonally). Squares with a number do not contain mines. Find the mines.

Example : (15 mines)

			1	2	1
		3		2	
3					
	3	4			1
			5		
			4		

Solution :

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

2. Differences

(8 points)

This round contains two pairs of puzzles for which the clues are almost identical. There are 2 differences between the grids in each pair: 2 clues have been moved from one place to another, or deleted. Find the puzzles and the differences.

Solution: Pair 1: Puzzles: Skyscrapers, Easy as 1-2-3
Values of the clues moved or deleted: 2, 4

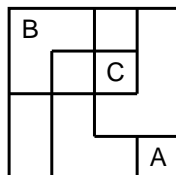
Pair 2: Puzzles: ABCD Connection, ABCD Dissection
Values of the clues moved or deleted: A, B

3. Different neighbours

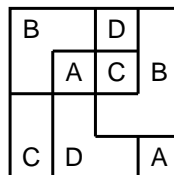
(10 points)

Fill the grid with letters A, B, C, D (one in each area) so that areas with the same letters do not touch each other, not even diagonally.

Example :



Solution :

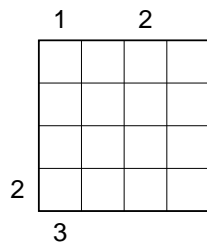


4. 1-2-3 Loop

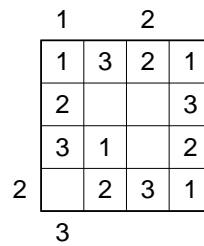
(8 points)

Draw a closed loop, made of horizontal and vertical line segments connecting the centers of adjacent squares. The loop cannot touch itself, not even diagonally. Consecutive cells of the loop are numbered 1,2,3,1,2,3,... The clues around the grid indicate the first digit visible in that row or column.

Example :



Solution :

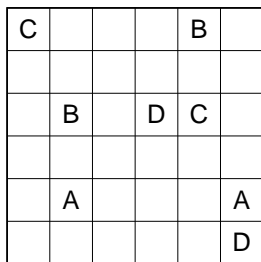


5. ABCD Connection

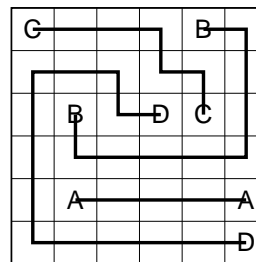
(8 points)

Connect each pair of identical letters with an unbroken line. The lines do not intersect or overlap, and pass through the centers of (horizontally or vertically) consecutive squares. Every square of the grid must be used.

Example :



Solution :

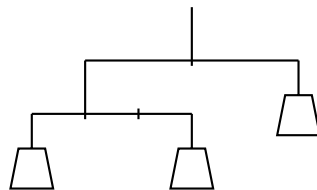


6. Balancing

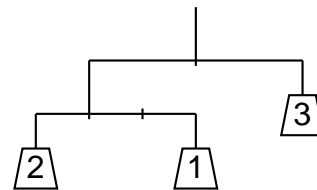
(20 points)

Assign the values 1 to 9 to the weights in the diagram so that everything balances as shown. (The beams have negligible weight). Each value will be used exactly once.

Example : (1 to 3)



Solution :

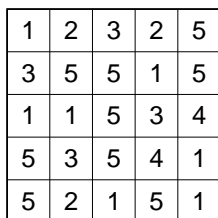


7. Hitori (All alone)

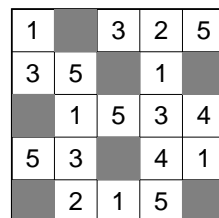
(10 points)

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 :



Solution :



8. Str8ts

(25 points)

The rows and columns are divided into blocks of white cells. Complete the white cells using the digits from 1 to 7 (exactly one per cell), so that each block of white cells forms a straight. A straight is a set of consecutive digits, written in any order. A same digit cannot appear more

than once in a given row or column. If a black cell contains a digit, then this digit cannot appear in the white cells of the corresponding row and column.

Example : (1 to 5)

		3		
	4			
			5	
2				

Solution :

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

9. Skyscrapers

(15 points)

The grid represents a group of skyscrapers. Each row and column contains skyscrapers of different heights (from 1 to 6). 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). Fill in the grid with the heights of the skyscrapers.

Example : (1 to 5)

		3		3	
1					
2					3
					3
	2		2	4	

Solution :

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

10. Tents

(10 points)

Locate the tents in the grid. Each tree is connected to exactly one tent, found in a horizontally or vertically adjacent square. Tents do not touch each other, not even diagonally. The numbers outside the grid reveal the total number of tents in the corresponding row or column.

Example :

	2	1	3	1	2	1	2
2				🌳		🌳	
2				🌳			🌳
2	🌳	🌳					
2		🌳					
1					🌳	🌳	
1			🌳	🌳			
2	🌳						

Solution :

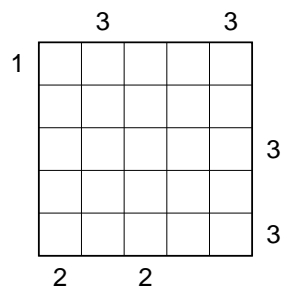
	2	1	3	1	2	1	2
2			△	🌳		🌳	△
2	△			🌳	△		🌳
2	🌳	🌳	△				△
2	△	🌳			△		
1			△		🌳	🌳	
1			🌳	🌳		△	
2	🌳	△		△			

11. Easy as 1-2-3

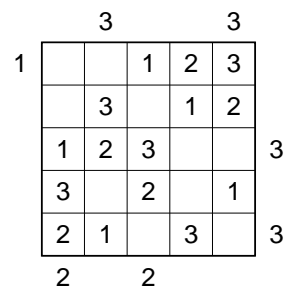
(20 points)

Place the digits 1, 2, 3 into the diagram, so that each digit occurs exactly once in each row and column. The clues outside the diagram indicate the first digit seen from that direction.

Example :



Solution :

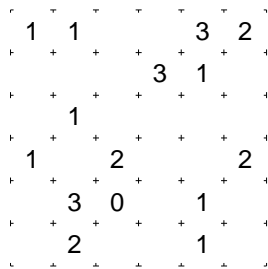


12. Fences

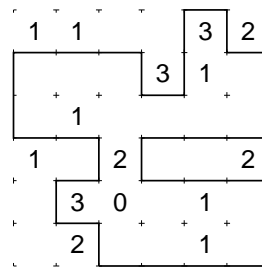
(20 points)

Draw a continuous closed loop by connecting neighboring dots horizontally or vertically (but not diagonally). A numbered square indicates exactly how many of its four edges are used by the loop.

Example :



Solution :

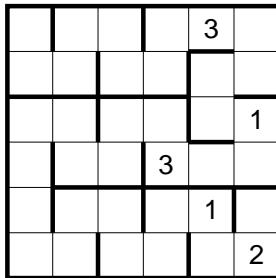


13. Waltz

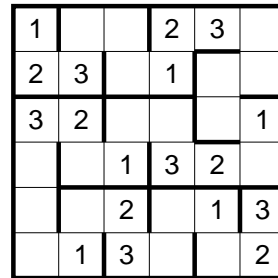
(25 points)

Place digits from 1 to 3 into the grid, at most one per cell, so that when travelling along the path delimited by the bold lines (starting from the upper-left corner) the digits encountered are in the order 1-2-3-1-2-3-...-1-2-3. Each digit appears exactly once in each row and column.

Example :



Solution :

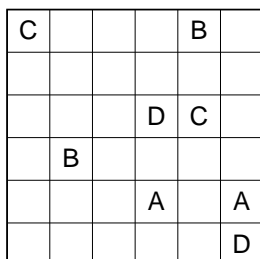


14. ABCD Dissection

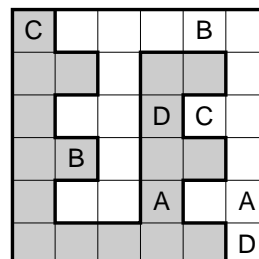
(45 points)

Cut the figure along the grid lines into two regions with the same shape and size (identical up to rotation and/or reflection), in such a way that each region contains each letter exactly once. Additionally, the regions do not contain any 2x2 square.

Example :



Solution :



France/Belgium WPC Qualifying Test 2011 – Instructions

Part 2 – Swimming – 55 minutes – 280 points + time bonus

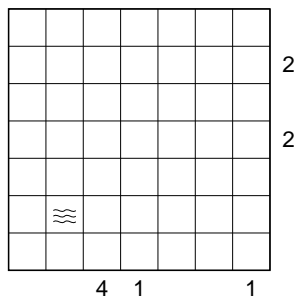
A competitor who submits correct answers to all puzzles before the end of the round will receive a bonus of 5 points for each remaining full minute.

1. Moby Dick

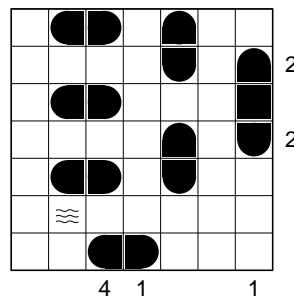
(15 points)

The grid represents an ocean, in which whales are swimming. One of them is a giant whale, which occupies a 1x3 rectangle. The others occupy 1x2 rectangles. The whales do not touch each other, not even diagonally. A cell with water cannot be covered by a whale. The clues outside the grid indicate how many whales are in the respective row or column. Find the position of all the whales.

Example :



Solution :

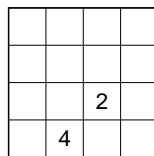


2. Islands (Nurikabe)

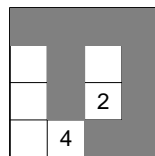
(20 points)

Shade some empty cells black so that the grid is divided into white areas (islands), separated by blackened cells which are linked together to form a continuous sea. Each island should contain exactly one of the given numbers, which is equal to its area. The islands may touch each other only diagonally. The sea cannot form any 2x2 square.

Example :



Solution :

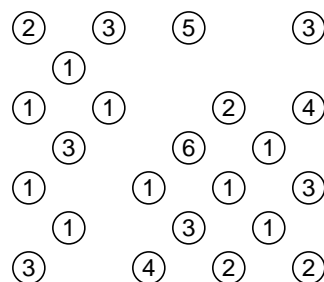


3. Hashiwokakero (Bridges)

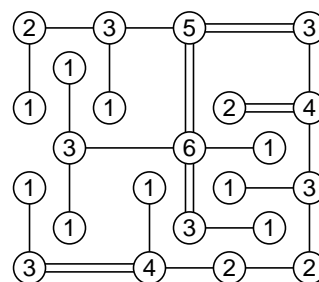
(15 points)

Connect the islands to each other by means of bridges. Every island must be reachable from every other island. The bridges may only be built horizontally or vertically, and may not cross other bridges or islands. There are at most two bridges between two given islands. The number in each island indicates how many bridges are connected to it.

Example :



Solution :

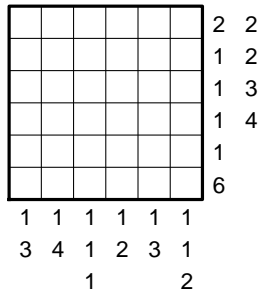


4. Coral Finder

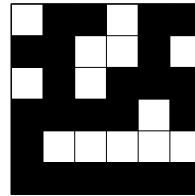
(25 points)

Blacken a connected set of squares (the coral) that does not touch itself, not even diagonally, and does not form any closed loops. The numbers outside the grid indicate the lengths of the consecutive parts of the coral in the given row or column. However, the numbers are given in increasing order, not in the order in which they actually appear in the grid. No 2x2 area may be covered by the coral.

Example :



Solution :

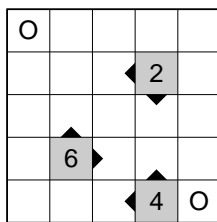


5. Sea Serpent

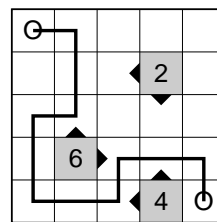
(15 points)

Place a snake in the grid. Its body may only touch itself diagonally. The clues in the grid indicate the number of cells occupied by the snake in the two directions indicated by the arrows. The snake does not pass through the gray cells. The locations of the head and tail are given.

Example :



Solution :

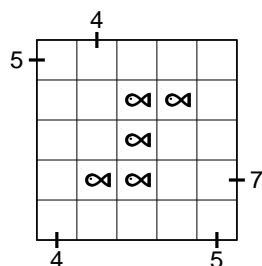


6. Anglers

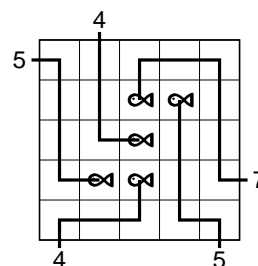
(35 points)

The grid represents a lake, around which anglers are standing at each position with a number. Each angler catches one fish. Their fishlines always connect the centers of adjacent squares (horizontally and vertically), and do not intersect. The numbers indicate the number of grid squares traversed by each fishline, including the cell with the fish. Every cell of the grid is occupied.

Example :



Solution :



7. Battleships in the Minefield

(60 points)

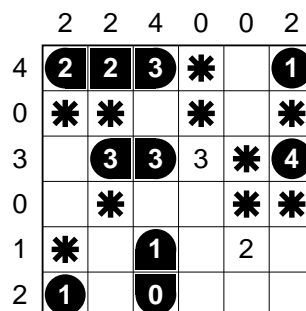
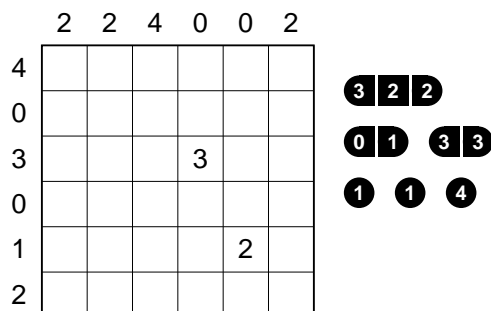
The 10-ship fleet shown next to the diagram (one 4-cell ship, two 3-cell ships, three 2-cell ships, four 1-cell ships) is hidden in the grid. Each segment of a ship occupies a single cell. Ships are oriented either horizontally or vertically, and they do not touch each other, not even diagonally. The numbers above and to the left of the grid indicate the total number of ship segments that appear in the corresponding row or column.

The grid also contains 30 mines, at most one per square. The digits already present in the grid, as well as those on the ship segments, indicate the number of mines present in the immediately adjacent squares (horizontally, vertically, and diagonally).

Locate the fleet and the mines, given that the squares containing a digit cannot contain a mine nor a ship segment, and that the squares containing a ship segment cannot contain a mine.

Example : (6 ships, 10 mines)

Solution :



8. Battleships vs. Sea Serpent

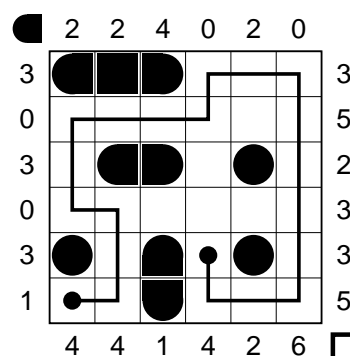
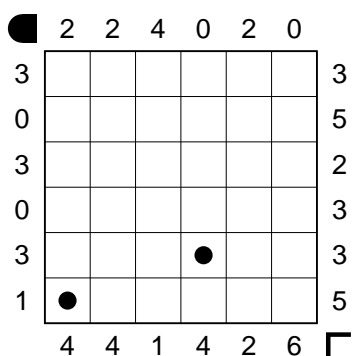
(95 points)

The 10-ship fleet shown next to the diagram (one 4-cell ship, two 3-cell ships, three 2-cell ships, four 1-cell ships) is hidden in the grid. Each segment of a ship occupies a single cell. Ships are oriented either horizontally or vertically, and they do not touch each other, not even diagonally. The numbers above and to the left of the grid indicate the total number of ship segments that appear in the corresponding row or column.

The grid also contains a sea serpent, consisting of horizontal and vertical line segments connecting adjacent squares of the grid. The snake occupies 45 squares, and cannot touch itself, not even diagonally. The numbers below and to the right of the grid indicate the number of squares occupied by the snake in each row or column. The extremities of the snake are given. Locate the snake and the fleet, given that ships cannot occupy the squares traversed by the snake.

Example : (6 ships, length 21)

Solution :



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Part 3 – Cycling – 50 minutes – 250 points + time bonus

A competitor who submits correct answers to all puzzles before the end of the round will receive a bonus of 5 points for each remaining full minute.

1. Tour de France

(15 points)

Draw a closed loop that passes through every cell of the grid exactly once, connecting the centers of adjacent cells (touching by a side), without crossing or touching itself. The letter sequence F-R-A-N-C-E-F-R-A-N-C-E... repeats along the loop. The gray cells are not part of the loop.

Example :

F	R	C	E	A	N
E	A	N	F	R	C
C	R	F	N	A	E
N	A	E	C	R	F

Solution :

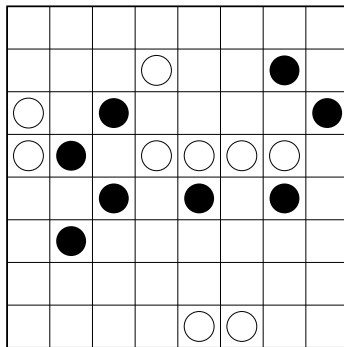
F	R	C	E	A	N
E	A	N	F	R	C
C	R	F	N	A	E
N	A	E	C	R	F

2. Dutch Loop

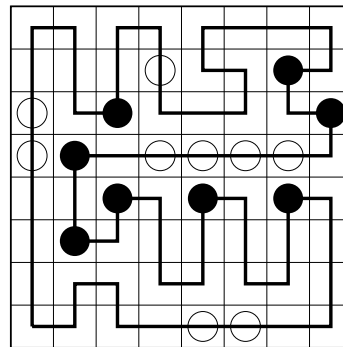
(15+20 points)

Draw a single closed loop in the grid, passing through each square exactly once. The loop consists of horizontal and vertical line segments, and must not intersect or overlap itself anywhere. The path must make a 90-degree turn on the black circles, and make a straight line on the white circles.

Example :



Solution :



3. Unique cycle

(25 points)

Almost all the cells of the grid come in pairs with strictly identical contents. There are three cells whose contents are unique. Find them.

Example :

O	L	L	O	V	
V	E	V	E	L	
V	E	V		V	
L	O		L	L	
L	O	V	E	V	E
V	E	L	O	O	L

Solution :

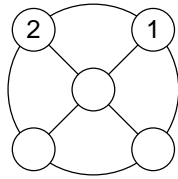
O	L	L	O	V	
V	E	V	E	L	
V	E	V		V	
L	O		L	L	
L	O	V	E	V	E
V	E	L	O	O	L

4. Magic bicycle

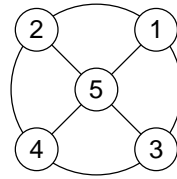
(45 points)

Place the numbers from 1 to 14 (each exactly once) in the circles, so that the sum of the values on a straight line or on a circle is always the same. Two numbers are already placed.

Example : (1 to 5)



Solution :



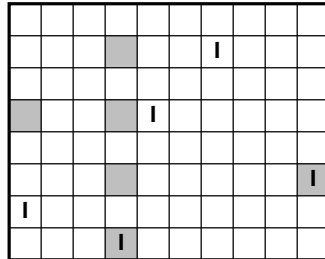
5. Yellow jersey

(65 points)

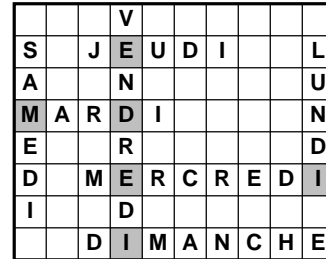
Enter the 28 names below (Tour de France winners from 1952 to 2010) into the grid. All the A's are already placed. All the cells where two words intersect are grayed. All the words are interconnected, and no word which is not in the list (not even a two-letter word) can appear.

Example : (the I's are already placed)

L U N D I
M A R D I
M E R C R E D I
J E U D I
V E N D R E D I
S A M E D I
D I M A N C H E



Solution :

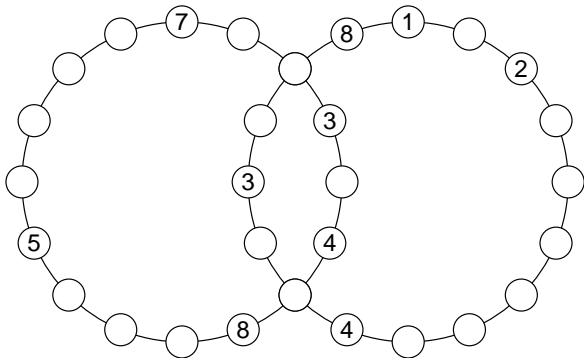


6. Wheels of fortune

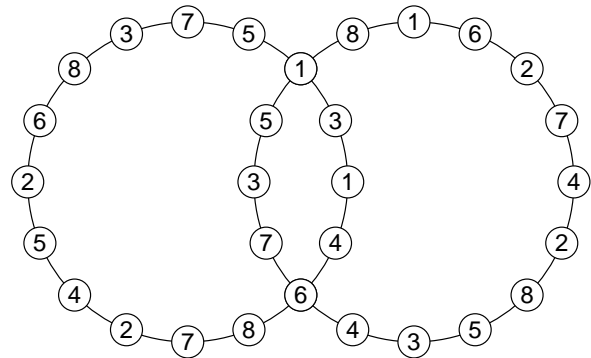
(65 points)

Enter digits into the empty circles, so that each large wheel contains each digit from 1 to 8 exactly twice, and two circles containing the same digit are separated by a number of circles equal to that digit: one cell separates the two 1's, two cells separate the two 2's, etc.

Example :



Solution :



France/Belgium WPC Qualifying Test 2011 – Instructions

Part 4 – Long-distance running – 110 minutes – 560 points + time bonus

A competitor who submits correct answers to all puzzles before the end of the round will receive a bonus of 5 points for each remaining full minute.

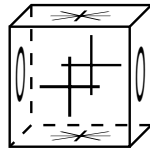
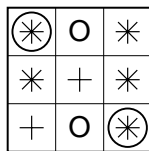
1. Rolling Block Maze

(30 points)

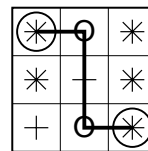
A die carries on each of its faces one of the symbols *, +, o, so that opposite faces carry the same symbol (see figure). The die is initially on the upper-left-most square of the grid, with the face in contact with the grid carrying the symbol *. It then rolls from square to square in the 4 directions, each time rotating 90 degrees about one of its edges until a new face is in contact with the grid. At each step, the face in contact with the grid must carry the same symbol as the square of the grid it occupies.

Find the shortest path to the lower-right corner of the grid.

Example :



Solution :



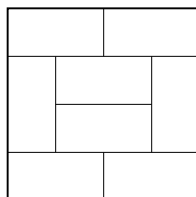
2. Magnets

(50 points)

The grid is made up of magnetic and non-magnetic plates. Each magnetic plate has two halves: one positive (+) and one negative (-). Halves with the same symbol can not be horizontally or vertically adjacent. The numbers outside the grid indicate how many magnetic halves of each kind can be found in that row or column. Some clues have been erased.

Find the polarity of all magnets.

Example :



1

2 1

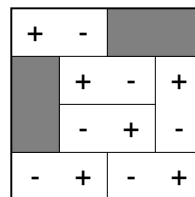
1 2

2

1 2 1 2 +

1 2 2 1 -

Solution :



1

2 1

1 2

2

1 2 1 2 +

1 2 2 1 -

3. Diagonal Easy as DEBRECEN

(50 points)

Enter at most one letter per cell so that every row, column, and main diagonal contains exactly the letters of the word DEBRECEN. The clues around the grid indicate the first letter encountered in the corresponding row or column. A black cell cannot contain a letter; a cell marked _ must contain a letter.

Example : (EGER)

	G	R	E	G	E
R	■	■	■	■	■
G	■	■	■	■	■
E	■	■	■	■	■
E	■	■	■	■	■
R	■	■	■	■	■
		E	E	E	

Solution :

	G	R	E	G	E
R	■	R	E	G	E
G	G	E	R	E	■
E	E	E	G	■	R
E	E	■	E	R	G
R	R	G	■	E	E
		E	E	E	

4. Kakuro

(50 points)

Enter a single digit from 1 to 9 into each empty square of the grid, so that the digits in each series of white squares add up to the number given in the gray-colored cell at the top or to the left. A number above a diagonal bar refers to the digits to be filled in to the right of that cell. A number under a diagonal refers to the digits to be filled in below that cell. The digit 0 is not used, and no digit is ever repeated within a group.

Example :

■	■	■	■
■	■	22	6
■	6	■	■
16	■	■	■
20	■	■	■
18	■	■	■

Solution :

■	■	■	■
■	■	22	6
■	6	5	1
16	9	8	3
20	7	9	2
18	■	■	■

5. Blackout Dominos

(80 points)

A domino set consisting of the 45 dominos from 1-1 to 9-9 has been placed into the grid, without overlapping. The borders of the dominos have been erased, and additional digits have been written in the unused cells.

Blacken the unused cells, and reconstruct the missing lines so that each domino can be found exactly once in the diagram. Black cells cannot touch each other by a side.

Example : (6 dominos from 1-1 to 3-3)

Solution :

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

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

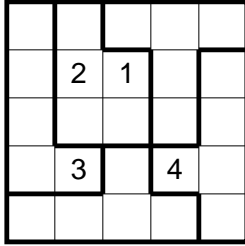
2	1	3	■	2
2	1	3	2	2
1	3	1	3	■

6. Star Battle Sudoku

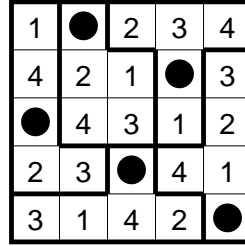
(100 points)

Every cell of the grid contains either a digit (from 1 to 9) or a star. Fill in the grid so that every highlighted area, every row and every column contains exactly 2 stars and once each digit from 1 to 9. The stars cannot touch each other, not even diagonally.

Example : (one star + digits 1–4)



Solution :



7. Skyscrapers and Ring Road

(200 points)

Each row and column of the grid contains 7 skyscrapers of different heights (from 1 to 7). 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).

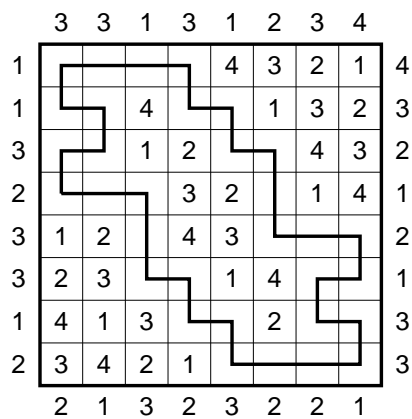
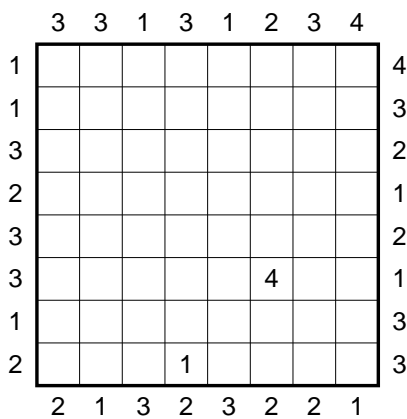
The cells which do not contain a skyscraper are part of a closed loop made of horizontal and vertical segments linking the centers of adjacent cells. The loop passes through every cell which does not contain a skyscraper, without crossing or overlapping itself.

Find the loop and the heights of the skyscrapers.

- **Partial points:** 100 points for the correctly drawn loop.
- **Hint:** you may request a hint to solve this puzzle, namely the position of all the skyscrapers with height 7. Once the hint has been requested, the problem is worth only 60 points, and there are no partial points for the loop anymore; you are also no longer eligible for a time bonus for this round.

Example : (4 skyscrapers from 1 to 4)

Solution :



France/Belgium WPC Qualifying Test 2011 – Instructions

Part 5 – Sprint to the finish line – 25 minutes – 115 points + time bonus

A competitor who submits correct answers to all puzzles before the end of the round will receive a bonus of 5 points for each remaining full minute.

1. Crypto (15 points)

In all the puzzles of this round, digits have been replaced by letters from A to P (O excluded). Each letter represents the same digit from 1 to 9 in all the puzzles. Different letters can represent the same digit. Find the value of each letter and enter it into the table; also solve the 5 puzzles.

(Partial points: 1 point per letter found)

2. Sum Skyscrapers (20 points)

The grid represents a group of skyscrapers. Each row and column contains skyscrapers of different heights (from 1 to 5). The numbers outside the grid indicate the sum of the heights of the skyscrapers that can be seen from that direction (a building located behind a taller one in the same row is completely hidden). Fill in the grid with the heights of the skyscrapers.

3. Arrows (20 points)

Enter an arrow (horizontal, vertical, or diagonal) into each of the 16 cells surrounding the grid. Each digit inside the grid indicates the number of arrows that point at it. Each arrow points to at least one square of the grid.

4. Fillomino (20 points)

Decompose the diagram into blocks of cells, and enter numbers into the cells, in such a way that each number indicates the area of the block containing it. Blocks of the same size cannot touch horizontally or vertically (but can touch diagonally). Two given numbers may belong to the same block, and there may be blocks which do not contain any of the given numbers.

5. Trid (20 points)

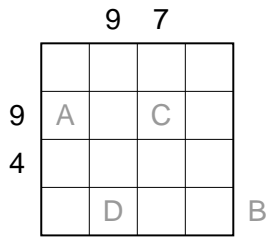
Enter digits from 1 to 5 into the circles, so that each line contains different digits. The values in the triangles indicate the sum of the 3 digits located at the vertices of the triangle.

6. Tapa (20 points)

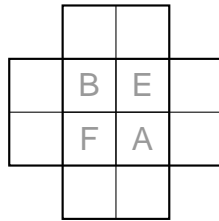
Paint some empty cells black to form a continuous wall of black cells (connected to each other horizontally or vertically). No 2x2 square can be completely black. The number(s) in a square indicate the lengths of the consecutive blocks of black cells among the adjacent squares (horizontally, vertically or diagonally): each number represents one block of black cells, and when there is more than one number in a square, the black cell blocks must be separated by at least one white cell. The order in which the numbers are given is irrelevant.

Example :

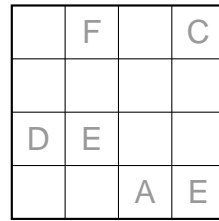
Sum Skyscrapers (1-4)



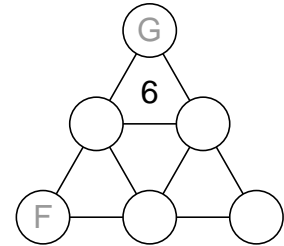
Arrows



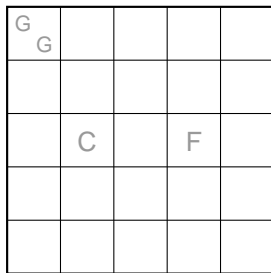
Fillomino



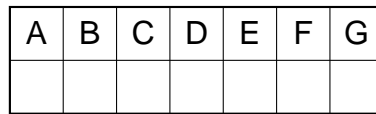
Trid (1-3)



Tapa

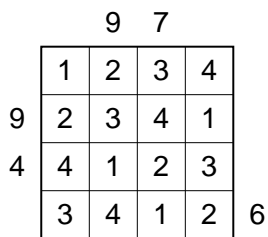


Crypto

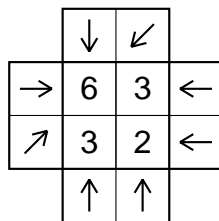


Solution :

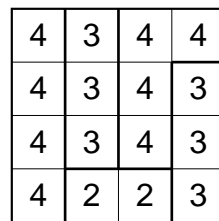
Sum Skyscrapers (1-4)



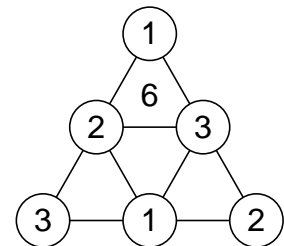
Arrows



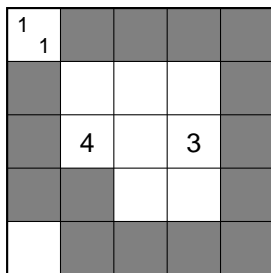
Fillomino



Trid (1-3)



Tapa



Crypto

