

WPC French  
Qualifier 2009

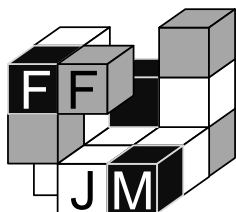
## Part IV

Name

**14:20 - 16:20 (120 minutes)**

<b>1. 2D Mastermind</b>	<b>30 points</b>
<b>2. Easy as Skyscrapers</b>	<b>60 points</b>
<b>3. Fencing Numbers</b>	<b>60 points</b>
<b>4. Futoshiki</b>	<b>50 points</b>
<b>5. Hashiwakakuro</b>	<b>40+70 points</b>
<b>6. Hexa Tapa</b>	<b>60 points</b>
<b>7. Japanese Battleships</b>	<b>40 points</b>
<b>8. Ken Ken</b>	<b>40+70 points</b>
<b>9. Light Bulbs</b>	<b>50 points</b>
<b>10. Magic Minesweeper</b>	<b>50+70 points</b>
<b>11. Puzzle</b>	<b>60 points</b>
<b>12. Pyramid</b>	<b>40 points</b>
<b>13. Snake Egg</b>	<b>45+65 points</b>
<b>14. Sum Skyscrapers</b>	<b>40 points</b>
<b>15. Sum Skyscrapers <math>\pm 1</math></b>	<b>30+50 points</b>
<b>16. Tetroscope</b>	<b>60 points</b>
<b>17. Total Masyu</b>	<b>30 points</b>
<b>18. Tractors</b>	<b>40 points</b>
<b>19. Tree Product</b>	<b>50 points</b>

**Total: 1200 points + time bonus (5 pts/minute)**



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## Part IV

### 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.

1	5	2	+
8	9	3	-
6	4	7	0
-	--	+-	

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

			+++
			+++
			+++
+++	+++	+++	

## Part IV

## 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.

		2	2		
					A
3					A
B					
	1				

A <sub>1</sub>	B <sub>1</sub>	C <sub>1</sub>
A <sub>2</sub>	B <sub>2</sub>	C <sub>2</sub>
A <sub>3</sub>	B <sub>3</sub>	C <sub>3</sub>
A <sub>4</sub>	B <sub>4</sub>	C <sub>4</sub>

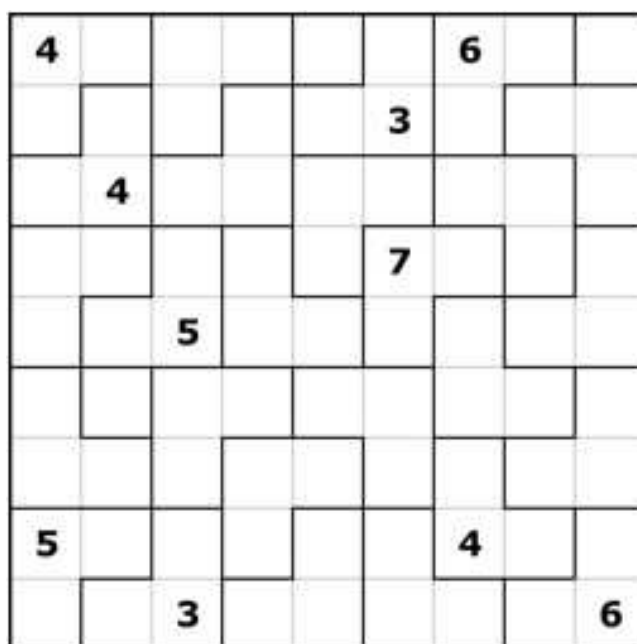
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## Part IV

### 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.



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## Part IV

### 4. Futoshiki (50 points)

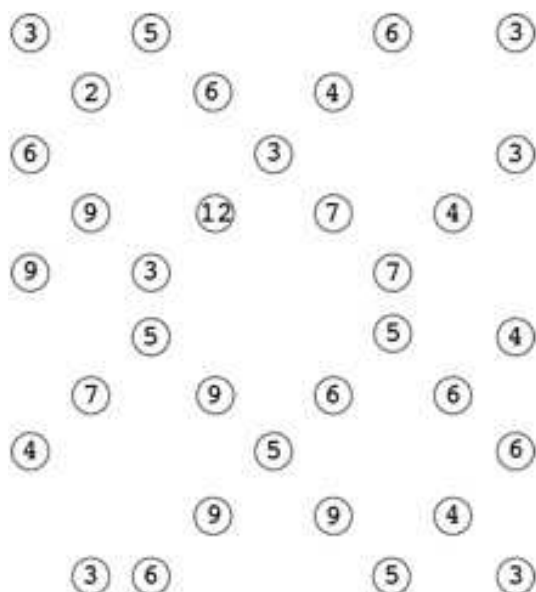
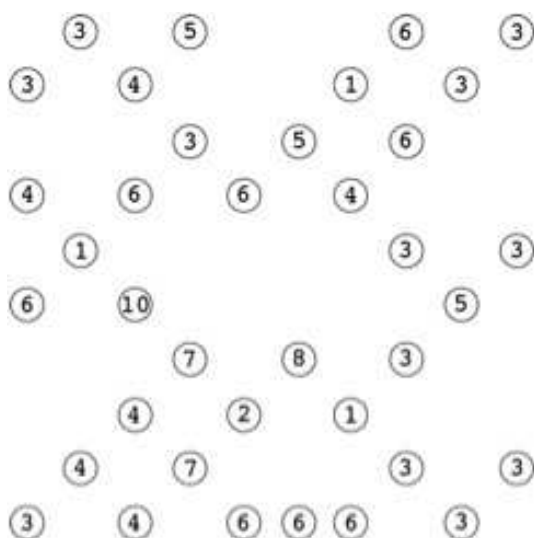
Fill in the grid with the numbers from 1 to 6. Each row and column must contain these numbers exactly once. All comparison signs must be true.

	∨		<	3	
	<	<			∧
∨				∨	
	∨			∨	6
			<		
1	<				

## Part IV

### 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.

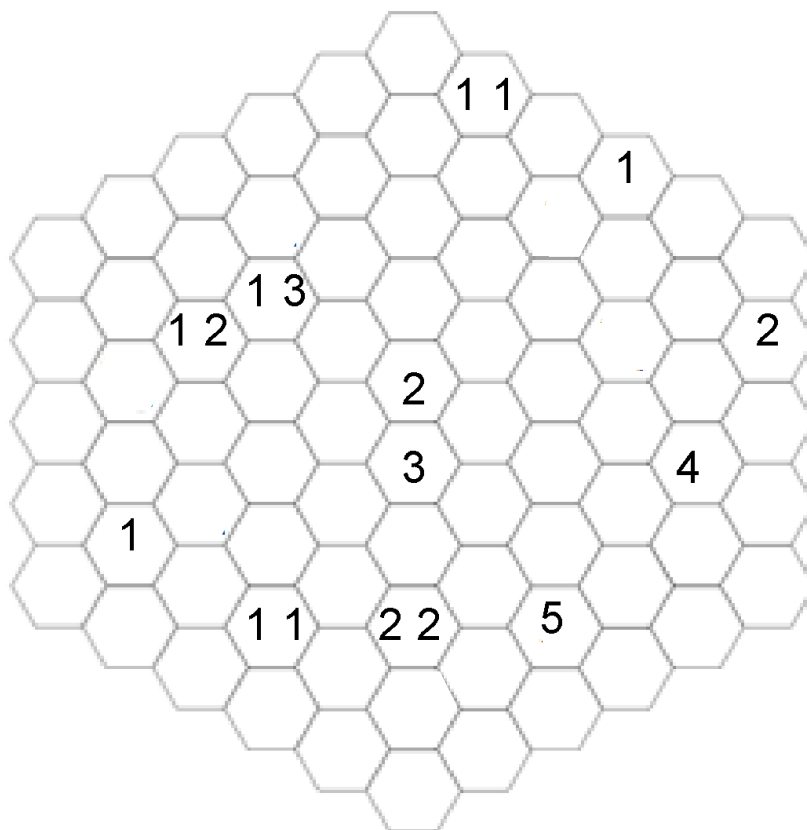


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## Part IV

### 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.



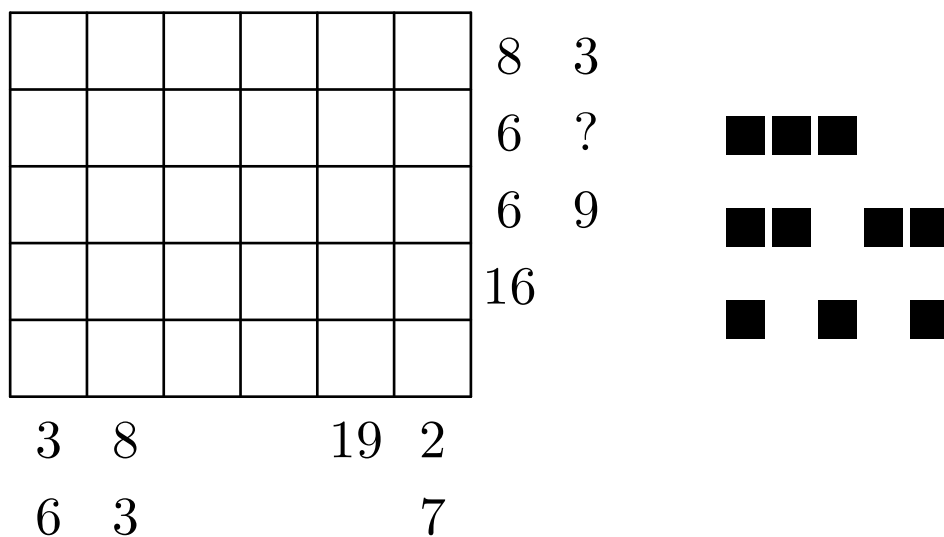
## Part IV

### 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.





## Part IV

### 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.

/3				x3000
		-3	/3	
	-3		-3	
+30				/3

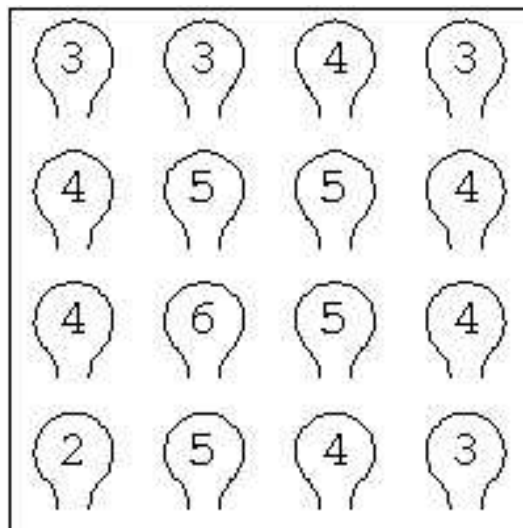
15+	?				7+
		19+			
	3+	14+			10+
5+			14+	13+	
	14+				
15+		10+	13+		14+
			4+		

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## Part IV

### 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.



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## Part IV

### 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.

	♥				2	
	♦					
				4	4	
	4				6	♥
	3	4		♠		
♦			♣			
						♣

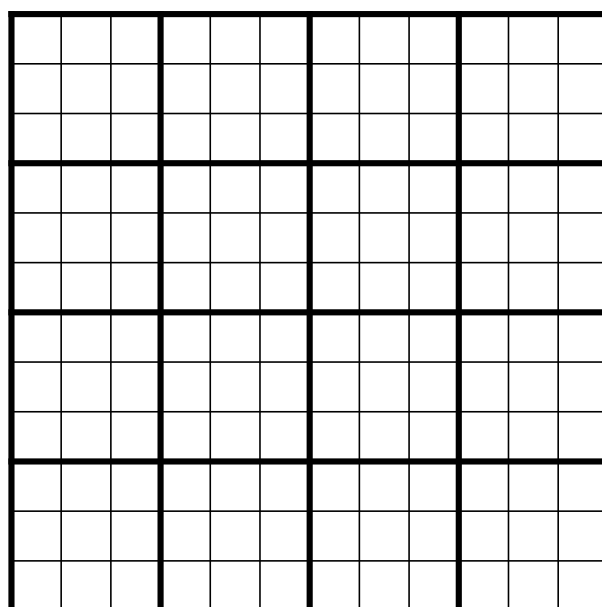
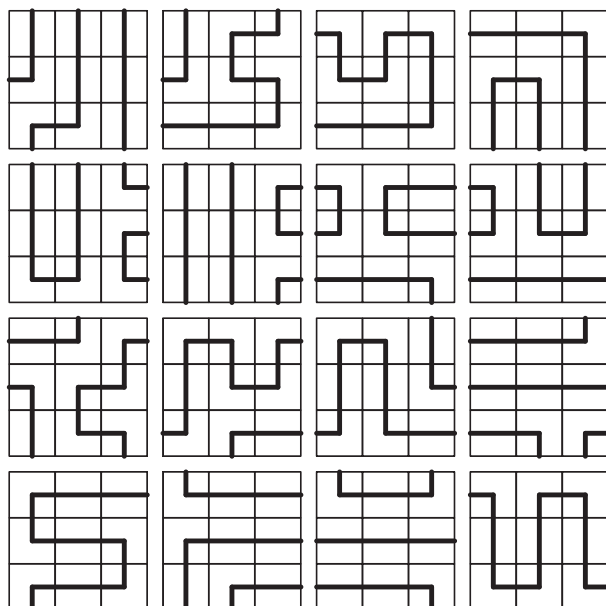
		3		♦	4	
3		4				♦
			4			♣
	♣	6				
4					♦	2
		♥	♠		2	

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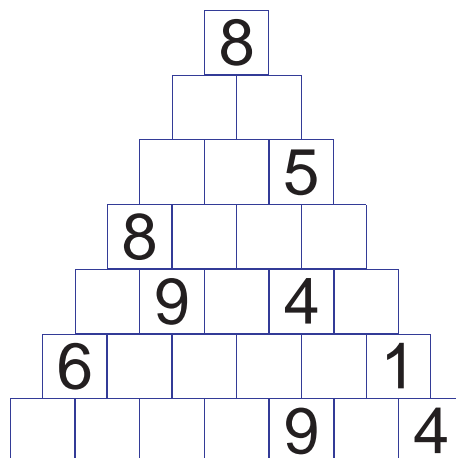
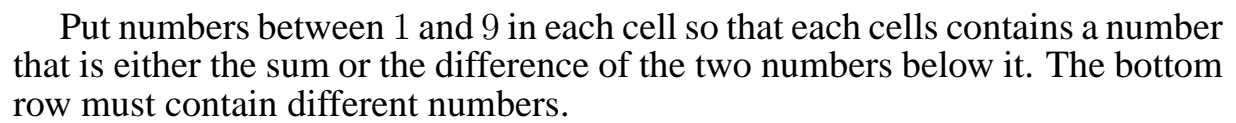
### 11. Puzzle (60 points)

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.

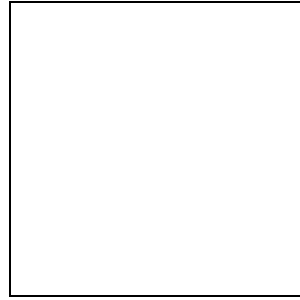
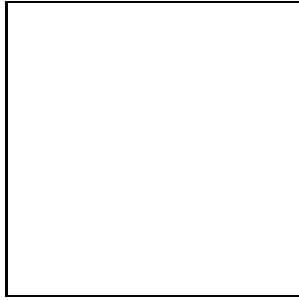


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## 12. Pyramid (40 points)



## Part IV



## 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.

			6					
	7							
								4
		3						
		5					2	
					1			

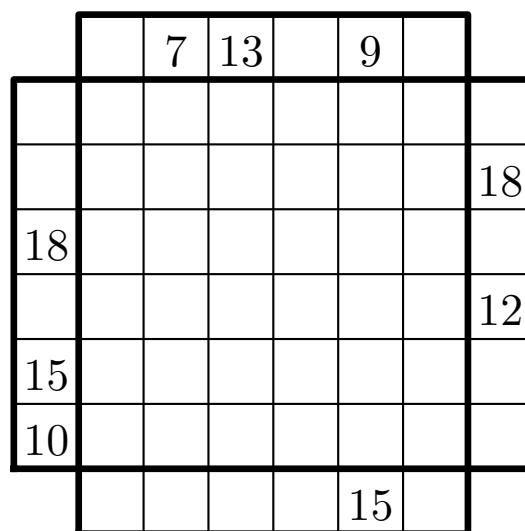
				4				
					6			
	5							
								7
2								

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## Part IV

### 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).



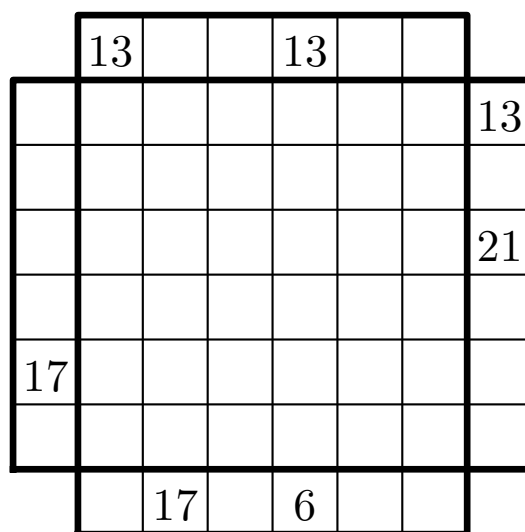
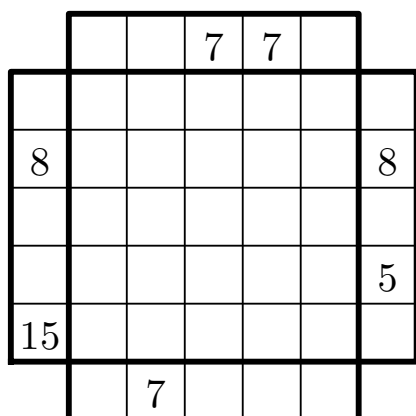
## Part IV

### 15. Sum Skyscrapers $\pm 1$ (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.





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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.

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



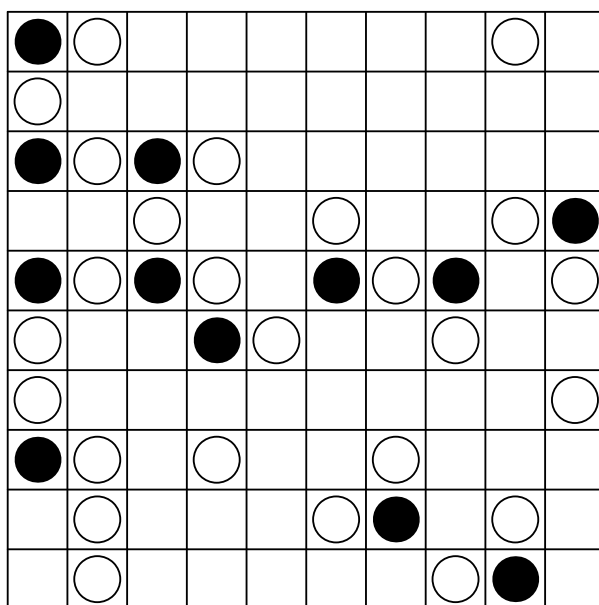
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### 17. Total Masyu (30 points)

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.

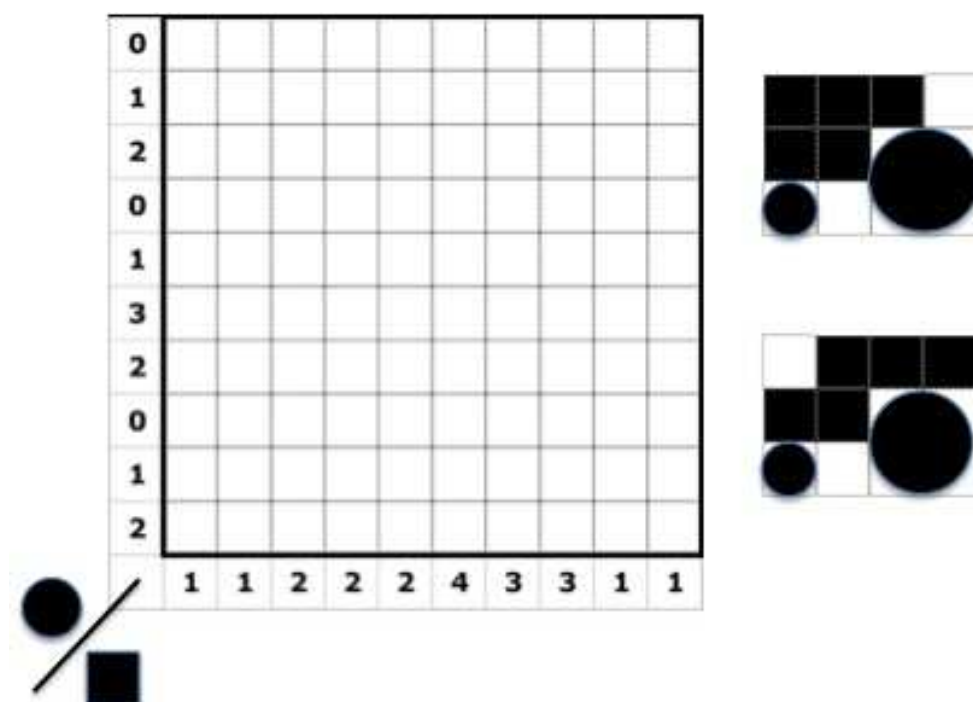
All cells that obey either the white / black circle rules have been marked.



## Part IV

### 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.



## Part IV

### 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.

