WPC French Qualifier 2008 – Instructions

Part III – 75 minutes – 475+? points + time bonus

A puzzler who submits correct answers to all puzzles before the end of this round will receive a bonus of 5 points for each remaining full minute. The bonus can be earned even if the solutions to Puzzle 9 (Blackout Math Optimizer) are not the optimal ones.

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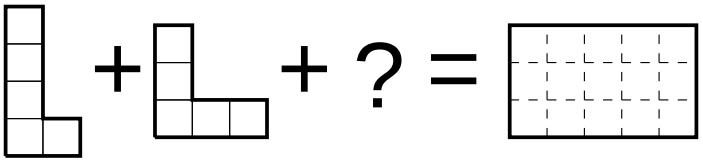
1. Pentaminoes (15 points)

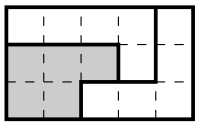
In each of the two diagrams, assemble five **different** pentaminoes into a 5x5 square. A pentamino consists of five squares connected together by their edges, and two pentaminoes differing by a rotation or a reflection are considered identical. The pentaminoes may not overlap.

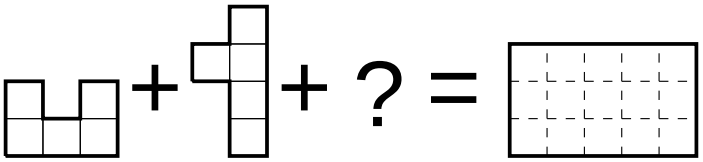
For each diagram, four of the five pentaminoes are given; the two missing pentaminoes are represented by question marks. The question marks must be replaced by **the same** pentamino in both diagrams. Pentaminoes may be reflected and/or rotated.

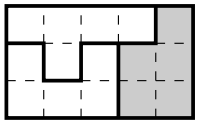
Example: (with 3 pentaminoes in a 5x3 rectangle)



Solution:







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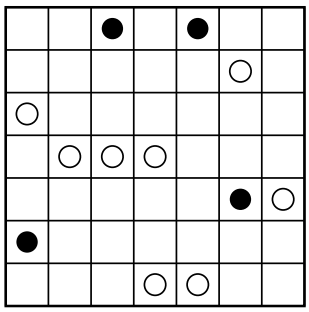
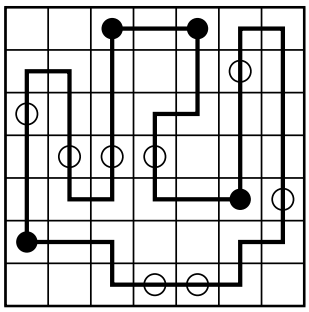
2. Pearls (Masyu) (20 points)

Draw a single closed loop passing through the centres of adjacent squares. The path must pass through every dot. When passing through a black dot, the path must make a 90° turn and extend at least two squares in both directions. When passing through a white dot, the path must go straight and make a 90° turn in at least one of the adjacent squares.

Example:



Solution:



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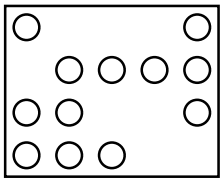
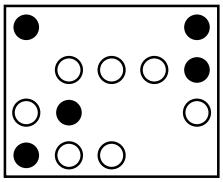
3. Five Circles (30 points)

Paint black five of the given circles, such that the distances between them are all different.

Example: 

Solution: 

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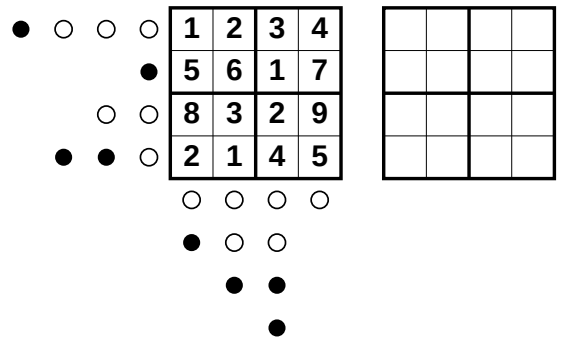
4. Mastermindoku (35 points)

Form a valid Sudoku using a subset of the digits between 1 and 9. Each of the six digits must appear once in every row, column, or 2 x 3 region surrounded by bold lines. Each black dot indicates a correct digit at the correct position in the corresponding row or column. Each white dot indicates a correct digit that is at the wrong position in the corresponding row or column.

Example:
(with 2x2 regions)



Solution:

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

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5. Unequal Skyscrapers (40 points)

The grid represents a plot with buildings of different heights. Fill the grid with digits from 1 to 6 (1 to 3 in the example) so that every row and every column contains distinct digits. The data outside the grid (note the inequality symbols $<$ and $>$) indicate how many buildings are visible in the corresponding row or column from that direction (the higher buildings hide the lower ones behind them).

Example:

	>1	<3	>1	
>1				>1
<3				>2
>1				<2
	>1	>1	<2	

Solution:

	>1	<3	>1	
>1	1	3	2	>1
<3	3	2	1	>2
>1	2	1	3	<2
	>1	>1	<2	

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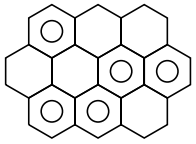
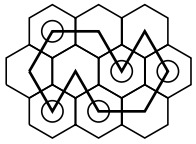
6. Hex Alternate Corners (40 points)

Draw a continuous loop in such a way that every second corner point should be in a cell containing a circle. The loop passes through each cell exactly once and must not intersect or overlap itself anywhere. The loop must turn when it passes through a cell containing a circle.

Example: 

Solution: 

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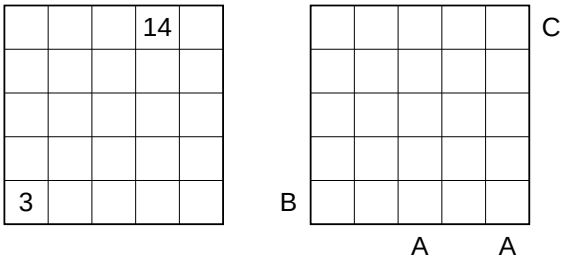
7. Easy Islands (45 points)

Islands: The grid consists of islands (white cells) separated by water (black cells). Each island contains a single numbered cell, which indicates how many cells the island consists of. The numbered cells cannot be blackened. Islands cannot touch, even by a corner.

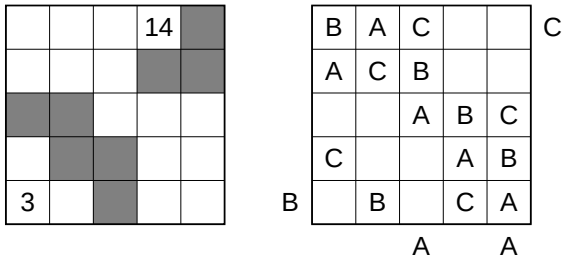
Easy as ABC: Place the letters A, B, and C into the diagram, so that each letter occurs once in every direction. The letters outside the diagram indicate the first letter seen from that direction.

If a cell in the first grid contains water or a number, then the corresponding cell in the second grid is empty. If a cell in the first grid is part of an island and does not contain a number, then the corresponding cell in the second grid contains a letter.

Example:



Solution:

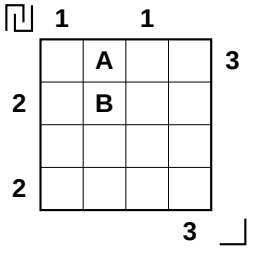


8. ABC Connect + Worms (45 points)

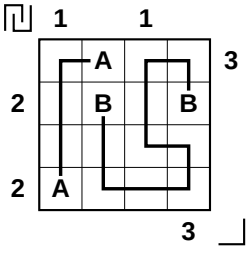
Place worms in the grid. Each worm is formed by an unbroken line which connects identical letters by passing through the centres of squares. The worms cannot overlap or cross each other. One extremity of each worm is placed. No square of the grid will remain empty.

The numbers at the left or above the grid indicate how many different worms can be found in the corresponding row or column. The numbers at the right or below the grid indicate how many turns the worms make in the corresponding row or column.

Example:



Solution:

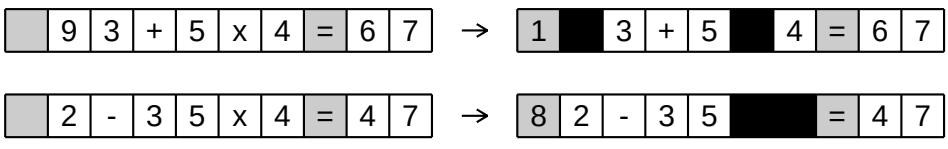


9. Blackout Math Optimizer (?+?+? points)

In each of the following mathematical equations, fill the empty square with a digit between 1 and 9, and blacken two squares so that the equation holds true. Grayed squares must not be blackened.

Score: for each of the first two equations, 3 times the value of the digit entered into the empty square. For the third equation, 6 times the value of the digit entered into the empty square.

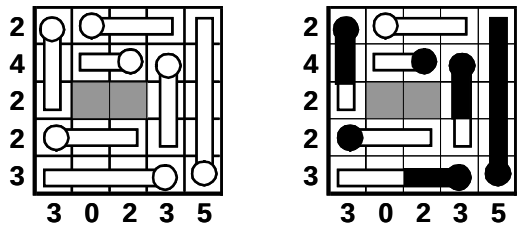
Example:



10. Paris brûle-t-il ? (Matches) (40 points)

The grid contains matches, which can be completely burnt, partially burnt, or completely unburnt. The matches always burn from the head (rounded end) to the tail, without skipping any segments. The numbers around the grid indicate the number of burnt segments in the corresponding row or column.

Example and solution:



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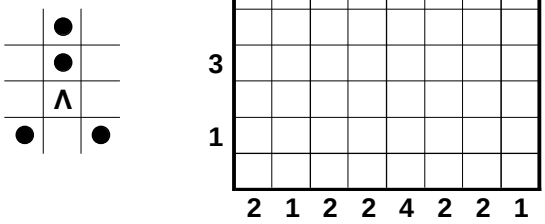
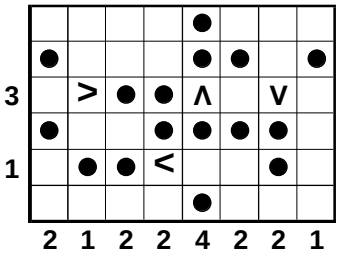
11. Eiffel Tower (45 points)

Place Eiffel towers in the grid. An Eiffel tower is made of a centre (Λ) and four dots (●). It can be oriented in the four directions (see the example). The numbers at the left of the grid indicate the number of centres in the corresponding row. The numbers below the grid indicate the number of dots in the corresponding column. A square cannot contain more than one centre or dot.

Example:



Solution:



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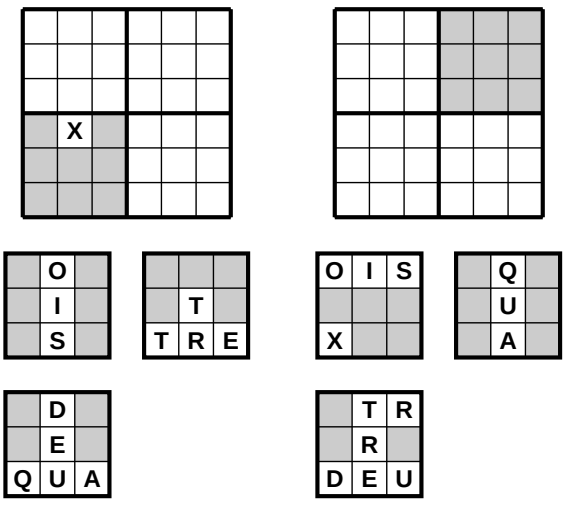
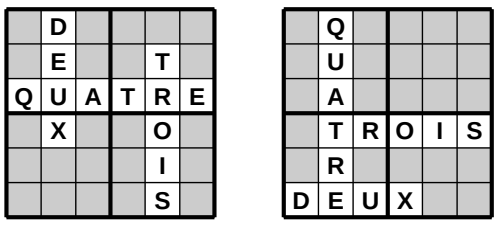
12. Crossword Pieces (50 points)

Two crossword puzzle solutions have been cut into pieces and scrambled. The words in both grids are exactly the same. Reconstruct the grids. Some pieces may be already placed.

Example:



Solution:



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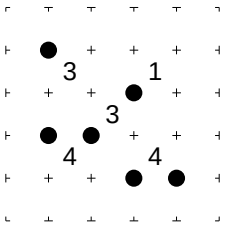
13. Alternate Corners + Fences Posts (60 points)

Draw a single closed loop by connecting neighbouring nodes horizontally or vertically (but not diagonally). The loop passes through every node. Each numbered square indicates how many times the path turns at one of its corners. In addition, every second turn made by the path is marked by a dot. The path must turn when it passes through a dot. Some dots are already placed.

Example:



Solution: