

# WPC French Qualification September 2004 – Booklet

## **Schedule**

Sunday, September 5, 2004.

- 10.30–12.30 Part I – WPC Classics
- 12.30–14.30 Lunch
- 14.30–15.45 Part II – Relay
- 16.00–18.00 Part III – WPC Less Classics
- 18.00–19.15 Part IV – Difficult Problems

## **1 Part I – WPC Classics – 120 minutes**

### **1.1 Star Battle – 10 points**

Place two stars, the size of one square, in each column, each row, and each black-edged region of the grid. The stars do not touch each other, not even diagonally.

### **1.2 Take Circles – 10 points**

Find a path from the upper left corner to the lower right corner that passes through every circle exactly once. The path may not touch itself, not even diagonally.

### **1.3 Crack it On – 10 points**

Enter all the given words into the two grids in such a way that each area contains exactly one letter. The words should read across and down in every row and column of each grid.

### **1.4 Overlay – 10 points**

Draw squares with sides at least two units long, using the grid lines so that two different squares do not have any corner, side, or segment in common. Each given point marks a corner of a different square.

### **1.5 Snake Path – 15 points**

There is a snake in the grid, that goes horizontally or vertically, never touching itself even diagonally, with the head in A and the tail in E. Find the snake, knowing that its body is formed by consecutive sequences of the letters A, B, C, D, E, A, B, C, ..., E. The clues outside the grid indicate which letter appear first from that direction.

### **1.6 Domino Hunt – 15 points**

A complete domino set (28 dominos from 0-0 to 6-6) has been placed in the grid. The sides of the dominoes have been erased and the spots have been replaced by numbers. Draw the edges of the dominoes in the grid.

### **1.7 Eminent Domain – 15 points**

One or more horizontal or vertical straight lines are drawn from each numbered square. Lines cannot cross black squares or other numbered squares. Each number indicates how many squares are connected by its lines; the numbered squares themselves are not counted. No lines overlap or intersect each other.

There will remain exactly one empty square per row and column.

### **1.8 Zones – 15 points**

From each digit, draw a single continuous line, moving horizontally or vertically, having the length given by that number (the number itself is not counted). The lines cannot intersect each other or themselves and do not pass through the other digits. Every square in the grid is used exactly once.

### **1.9 Word Search – 15 points**

Fill all squares of the grid with a letter so that all the given words appear exactly once in crossword style (left to right or top to bottom), separated by black squares. These squares are obtained by blackening some As. Two black squares can touch only diagonally. All As have already been placed into the grid for you.

### **1.10 Paint it Black – 15 points**

The numbers inside the grid show how many of the nine adjacent squares (the one with the number and its eight neighbours) should be colored.

### **1.11 Easy as ABC – 20 points**

Place the letters A, B, and C in the hexagonal grid so that in every horizontal line and in all of 18 diagonals, each letter should appear exactly once. The letters outside the grid indicate the first letter seen from that direction.

### **1.12 Japanese Sums – 25 points**

Place figures 1–8 in the grid, only different figures in each row and column. The numbers outside the grid indicate the sum of the numbers filled

in consecutively. Two different sums must be separated by at least one black square.

### 1.13 Paint it Black II – 25 points

The numbers outside the grid indicate the sizes of all maximal blocks of consecutive black squares in the corresponding rows or columns, in the order in which they occur. Rebuild the picture.

## 2 Part II – Relay – 75 minutes

This round consists of seven puzzles. For  $i$  in  $\{2, 3, 4, 5, 6, 7\}$ , in order to solve puzzle  $\#(i)$ , you need to solve puzzle  $\#(i-1)$  first.

Once puzzle  $\#1$  is solved, report the values of the three clues in problem  $\#2$ , then solve it, report the number of mines of each row as indicated in problem  $\#3$ , then solve it, find the letters corresponding to the direction the ones are pointing to, report these letters in problem  $\#4$ , solve it, decode the contents of some squares to get numbers, report those numbers in problem  $\#5$ , report the clues in problem  $\#6$ , solve problem  $\#6$  and report its clues in problem  $\#7$  and solve it.

### 2.1 Magic Square – 10 points

Fill digits 1-9 into the grid in such a way that every digit appears once in each row, each column, and each black-edged 3x3 region.

### 2.2 Minesweeper – 15 points

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

Complete the diagram with the values of  $a$ ,  $b$ , and  $c$  obtained in puzzle  $\#1$ .

### 2.3 Eminent Domain – 15 points

One or more horizontal or vertical lines are drawn from each numbered square. Lines cannot cross black squares or other numbered squares. Each number indicates how many squares are connected by its lines; the numbered squares themselves are not counted. No lines overlap or intersect each other. There will remain exactly four empty squares.

Complete the diagram with the values of the greek letters obtained in puzzle #2.

### 2.4 Easy as ABCD – 20 points

Fill in the letters *A*, *B*, *C*, and *D* in the diagram. Each letter occurs once in each row and column. The letters outside the diagram indicate the first letter you come across from that direction.

Complete the diagram with the values of the greek letters obtained in puzzle #3.

### 2.5 Skyscrapers – 20 points

The grid symbolizes a group of skyscrapers. Each row and column contains skyscrapers of different heights (1-7). 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).

### 2.6 Pointing Arrows – 30 points

Write a number over each arrow in such a way that its value equals the number of different numbers the arrow is pointing to (an arrow points to all elements in its direction aligned with it).

### 2.7 Number Crossword – 40 points

Enter digits in the grid (one per square) so that the digits in each series of white squares add up to the number given in the grey-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 under that cell. The digit 0 is not used, and no digit is ever repeated in a group.

### 3 Part III – WPC Less Classics – 120 minutes

#### 3.1 Easy as ABC Varia – 5 points

Fill in the letters  $A$ ,  $B$ ,  $C$ , and  $D$  in the diagram. Each letter occurs once in each row and column. The letters outside the diagram indicate the *second* letter you come across from that direction.

#### 3.2 Hens and chicks – 5 points

Each hen (grey squares) has to watch after as many chicks (dotted squares) as its value. Each hen builds a path starting from itself that makes a 90-degree turn on each chick and goes straight to the next chick until it has seen all its chicks. The paths of two hens never intersect and all squares of the grid are seen by a hen.

#### 3.3 Triples – 10 points

Enter the letters A and B as lines of three consecutive squares (horizontally, vertically, or diagonally) consisting of the same letter (A-A-A or B-B-B) so that the digits outside the grid indicate the total number of cells occupied by letters in that row or column. Two lines with same letters do not touch each other, even diagonally. There are six lines containing As, and six lines containing Bs.

#### 3.4 Black Out – 10 points

Black some cells so that these black squares touch each other diagonally at the most and the remaining white squares form a single compact territory. The digits show the number of black cells in their region. A sequence of consecutive white cells in a straight horizontal or vertical line can pass through two different regions at the most. The cells containing digits can either be colored or remain white.

#### 3.5 Penta Loop – 15 points

Draw a single continuous loop that passes horizontally and vertically through every pentomino by exactly two cells, and that does not touch itself, even

diagonally.

### **3.6 Adjacent Products – 15 points**

Fill in the numbers between 1 and 6. Each number appears exactly once in each row and column and the product of the four elements adjacent to a given circle is equal to this value.

### **3.7 L-shapes – 20 points**

Divide the grid into L-shaped pieces, each of them containing one circle, placed exactly in the corner of the L-shape (intersection of the arms of the shape). Any pieces having at least one segment in common have different areas. The given line is part of the solution.

### **3.8 Penta placement – 20 points**

Place all the given pentomino elements into the grid so that they do not touch each other, even diagonally, in a possible rotated or mirrored position. The numbers outside the grid show the length of the first pentomino-segment "seen" from that direction in the corresponding row or column. The pentominoes do not overlap the  $X$  signs.

### **3.9 Inside-Outside Loop – 25 points**

Draw a single continuous loop of walls going horizontally and vertically along the grid-lines such that the digits show the total number of cells that are "seen" from that square (not counting the square itself) in that row and column inside, given that one cannot see over a wall.

### **3.10 Disquare – 25 points**

Place the numbers 1 to 12 into the grid. There must be exactly two numbers placed in each row, column, and main diagonal. The numbers outside the grid reveal the sum of the numbers in the corresponding row, column, or diagonal.

### **3.11 Skyscrapers Varia – 25 points**

There are 32 blocks of  $2 \times 1$  cells, with heights between 1 and 8, each number appearing exactly four times. Knowing that the digits outside the grid show how many blocks are "visible" from that direction in that row or column and that there are no two equal numbers in any row or column, find the blocks and mark their heights with numbers from 1 to 8.

### **3.12 Magic Square Varia – 25 points**

Fill digits 1-9 into the grid in such a way that every digit appears once in each row, each column, and each black-edged  $3 \times 3$  region. The double lines separate those adjacent cells whose values differ by 1.

## **4 Part IV – Difficult problems – 30 minutes each**

### **4.1 Domino-Battleships – 30 points**

In the grid, the 28 dominos are hidden. As for boats, they do not touch each other, not even diagonally. The numbers outside the grid indicate how many half-dominos are in the corresponding row or column.

### **4.2 Up to 10 – 30 points**

Divide the grid into zones such that the sum of the numbers of any zone equals 10.