

NAME:

POINTS:



# 7<sup>TH</sup> 24 HOURS PUZZLE CHAMPIONSHIP

25-26 NOVEMBER, 2006

HOTEL BENTA

BUDAPEST

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PUZZLES BY

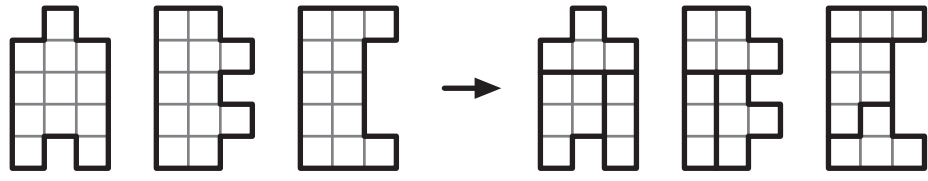
**CIHAN ALTAY & MEHMET MURAT SEVIM**

- |                          |                       |
|--------------------------|-----------------------|
| 1. Puzzle Construction   | 25 points             |
| 2. Arrow Web             | 45 points (20+25)     |
| 3. Looper                | 70 points (25+45)     |
| 4. Digitile              | 75 points             |
| 5. Digsaw                | 70 points (35+35)     |
| 6. Degree Fences         | 45 points             |
| 7. Easy as Skyscrapers   | 35 points             |
| 8. Unique Location       | 55 points (25+30)     |
| 9. Matchbox              | 45 points (20+25)     |
| 10. SumBox Sudoku        | 70 points             |
| 11. Cyclic Chain         | 95 points             |
| 12. Windows              | 50 points             |
| 13. Cannonic Battleships | 80 points             |
| 14. Up Numbers           | 65 points             |
| 15. Arithmetic Series    | 60 points             |
| 16. Coloured Pentominoes | 55 points             |
| 17. Box Match            | 60,40,25,15,10 points |

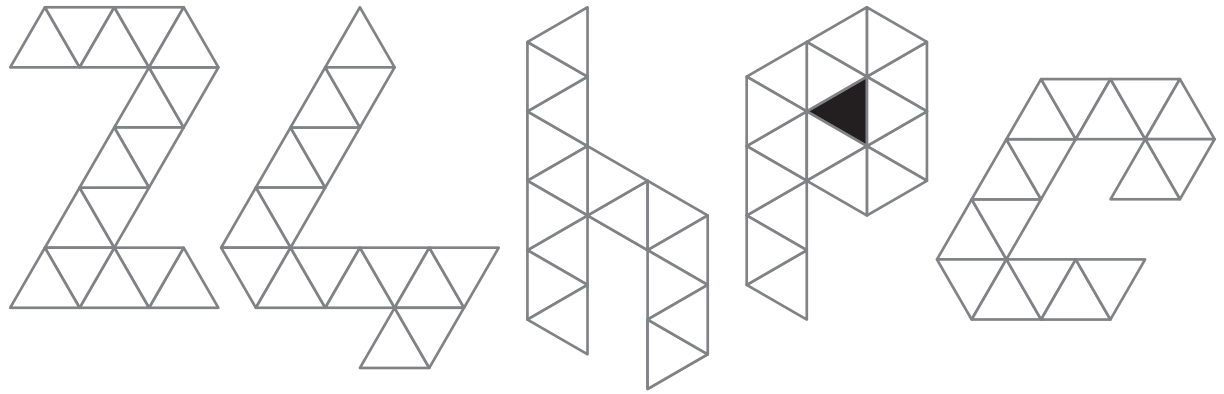


**1. Puzzle Construction**

Each given figure is constructed with the same three pieces. Divide the figures, following the grid lines, into three parts to identify these three pieces. Pieces may be rotated, but not reflected.

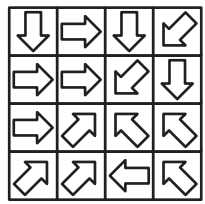


**25**  
POINTS



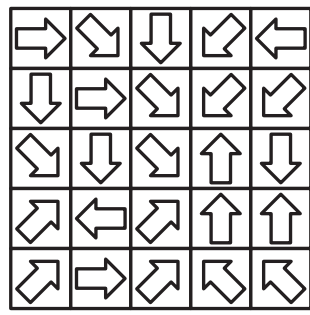
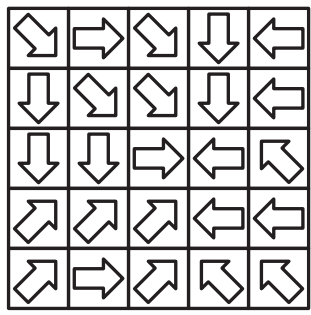
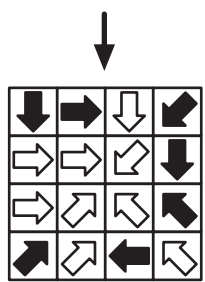
**2. Arrow Web**

Blacken some of the arrows so that each arrow in the grid points to exactly one black arrow.



**20**  
POINTS

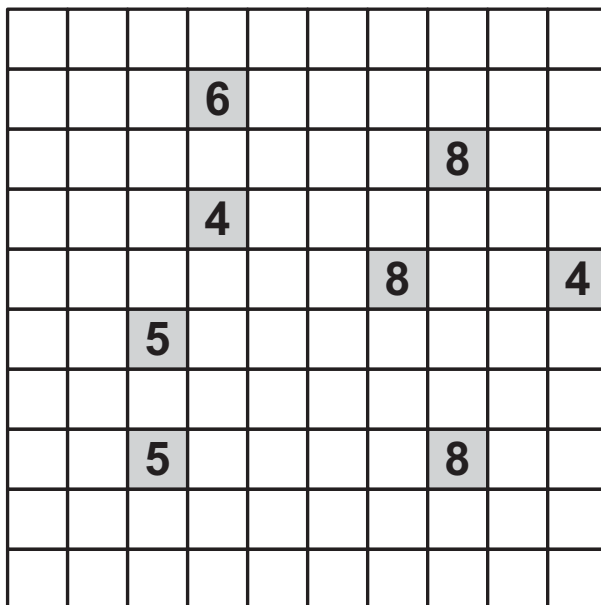
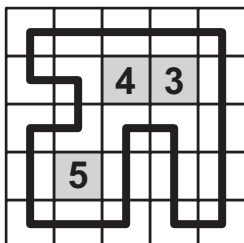
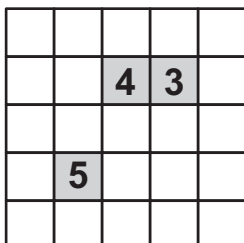
**25**  
POINTS



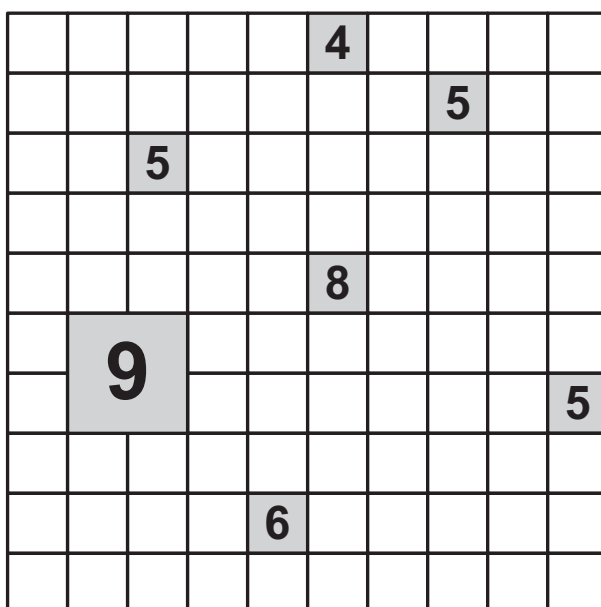


### 3. Looper

Moving horizontally and vertically, connect all of the empty cells to form a single loop that doesn't touch or cross itself. A number in a square tells the number of corners in the neighbouring cells including diagonal neighbours.



**25**  
POINTS

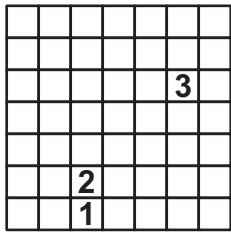


**45**  
POINTS

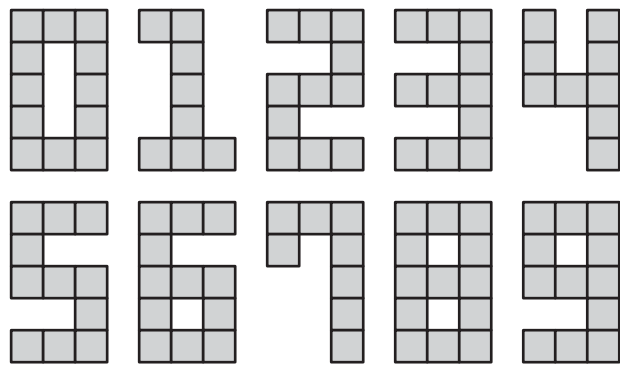
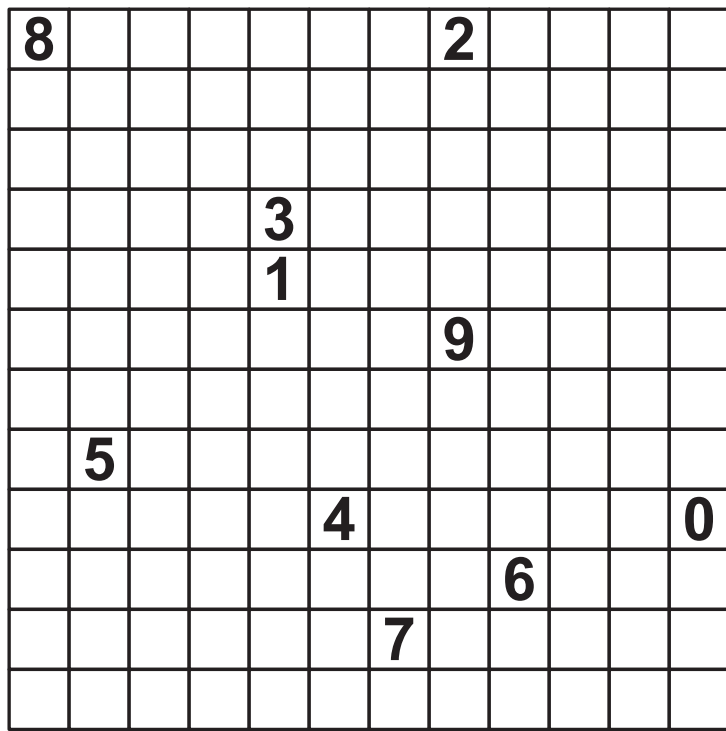
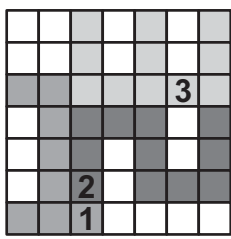
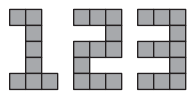


**4. Digitile**

Locate the figures of the ten digits (as shown) into the grid, without overlapping each other. Figures can be rotated, but not reflected. Each figure must contain its representing digit in the grid.



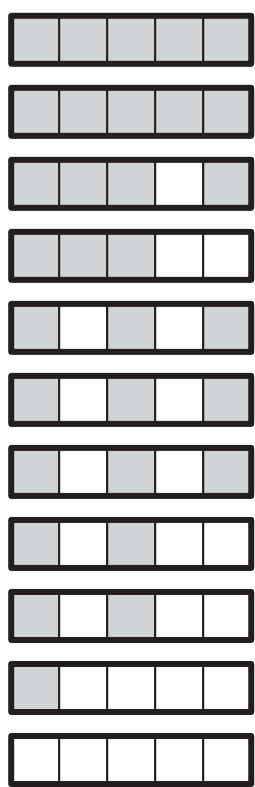
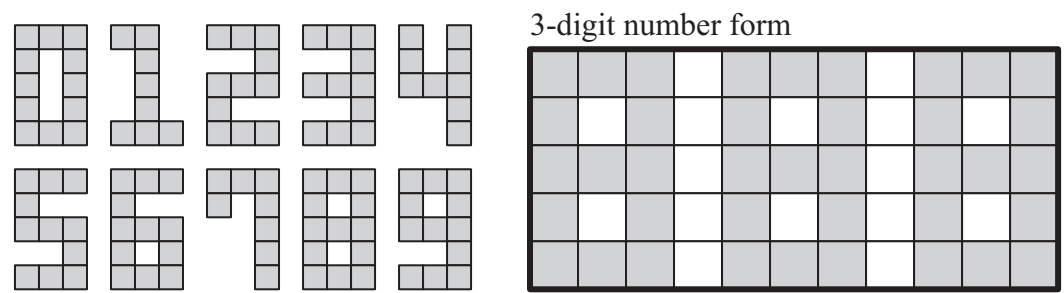
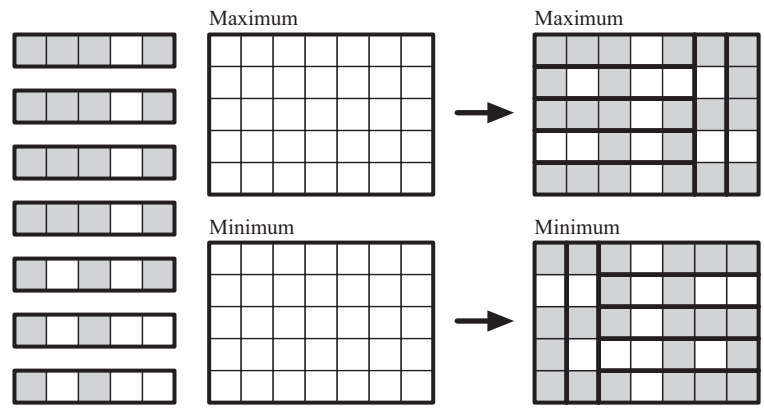
**75**  
POINTS





**5. Digsaw**

Put all of the 1x5 pieces into the grid (without overlapping) to see a 3-digit number, with digits in shown forms. Pieces can be rotated. **A)** Find the maximum 3-digit number. **B)** Find the minimum 3-digit number, without a leading zero.



Maximum


**35**  
POINTS

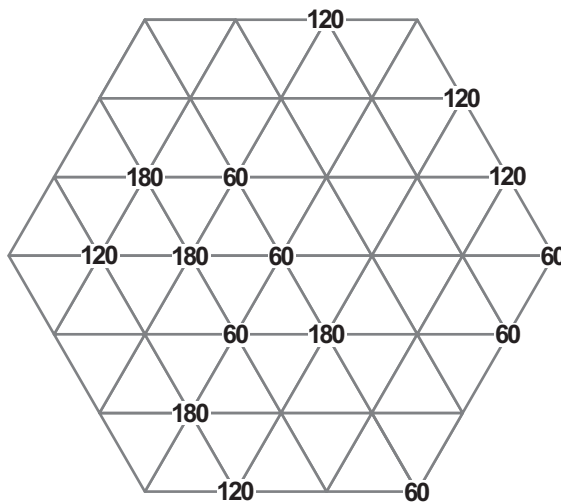
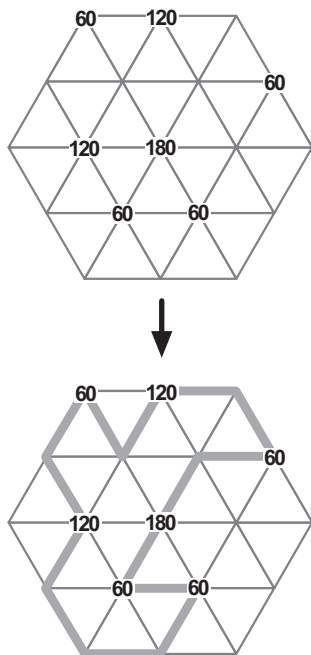
Minimum


**35**  
POINTS



### 6. Degree Fences

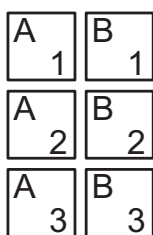
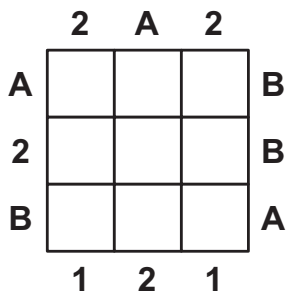
Following the grid lines, draw a single loop that doesn't touch or cross itself. A given number indicates a degree formed of the two lines meeting at that intersection point.



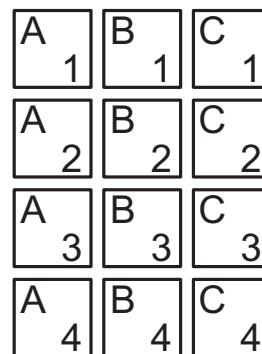
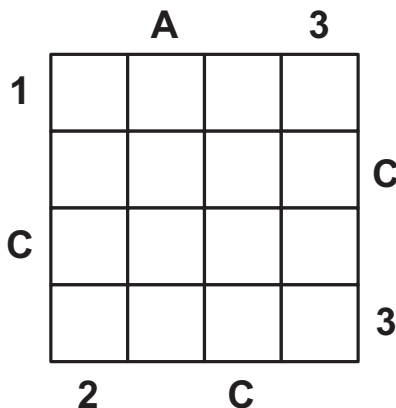
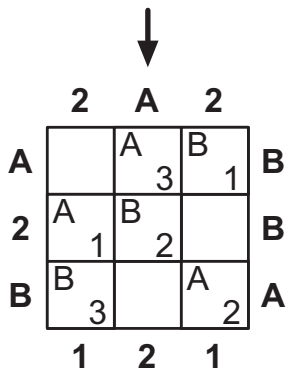
**45**  
POINTS

### 7. Easy as Skyscrapers

Locate each number-letter pair into 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.



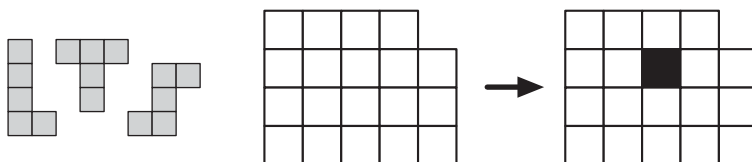
**35**  
POINTS





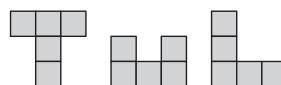
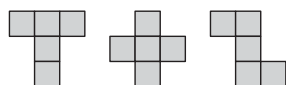
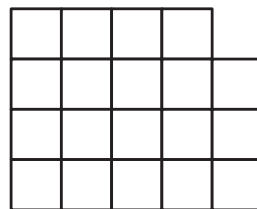
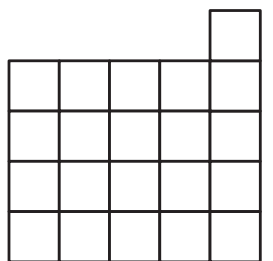
### 8. Unique Location

Black out one square, so that there remains only one way to locate the given pentominoes into the grid. Pentominoes can be rotated and reflected.



**25**  
POINTS

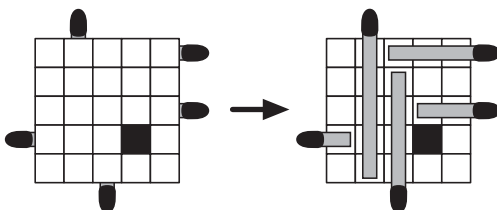
**30**  
POINTS



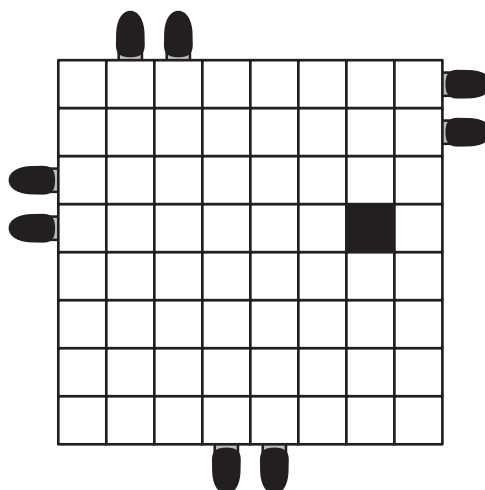
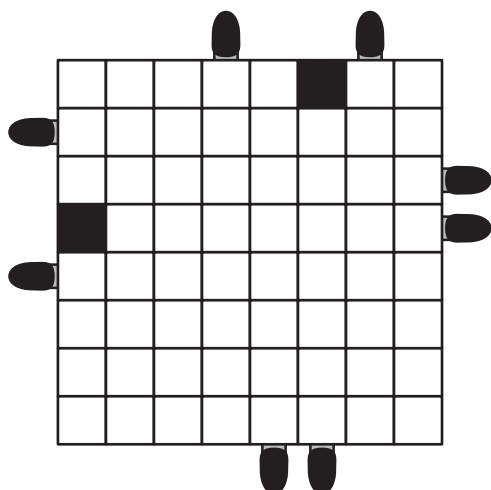
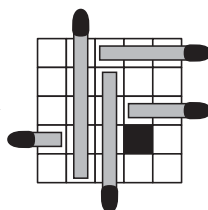
### 9. Matchbox

There are hidden and nonoverlapping matchsticks in the matchbox all of whose coated ends are shown. They have different lengths in whole unit sizes and there are no pieces on the black cells. Find all matchsticks.

**20**  
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**25**  
POINTS





### 10. SumBox Sudoku

Fill in the grid with digits from 1 to 9, so that in each row, in each column and in each 3x3 box all digits are different. There are some boxes with a plus sign where first two row of numbers add up to the number formed on the third row.

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



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

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POINTS

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





### 11. Cyclic Chain

Following the instructions given below, solve each puzzle in the cyclic chain where each one gives some extra information to the next puzzle.

**Alternate Corners:** Moving horizontally and vertically, connect all cells of the grid to form a single loop that doesn't touch or cross itself. Every second corner of the loop is on a circle; and each circle is a corner. Every other corner is on an empty cell. For every corner on an empty cell of the loop, put a tree in the same position of the next puzzle.

**Tents and Trees:** Set up a tent next to each tree, placing it to a horizontal or vertical neighbour. Tents cannot touch each other, not even diagonally. For every tent, put a '6' in the same position of the next puzzle.

**Sudoku:** Fill in the grid with digits from 1 to 6, so that in each row, in each column and in each 2x3 box all digits are different. For every odd digit in the grid, put a water mark in the same position of the next puzzle.

**Battleships:** Locate some number of 1-cell submarines into the grid, so that they don't touch each other, not even diagonally. A number outside the grid indicates the number of submarines seen in that direction. For every submarine, put a circle in the same position of the next puzzle.

**A** → **T**

○ ↑ ●

**B** ← **S**

≈ 1 3 5

Alternate Corners

↓

Tents and Trees

↓

Sudoku

1			
		4	
		3	
2			

↓

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

Battleships

				1
				1
		≈		1
				2
				2

↓

			●	1
	●			1
	≈			1
	●			2
				2

These four examples are not linked.

Alternate Corners

Tents and Trees

↖ → ●

○ ↑ ●

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△ ↓ 6

Battleships

						1
						1
						1
						1
						1
						1
						1
1	1	1	0	1	2	

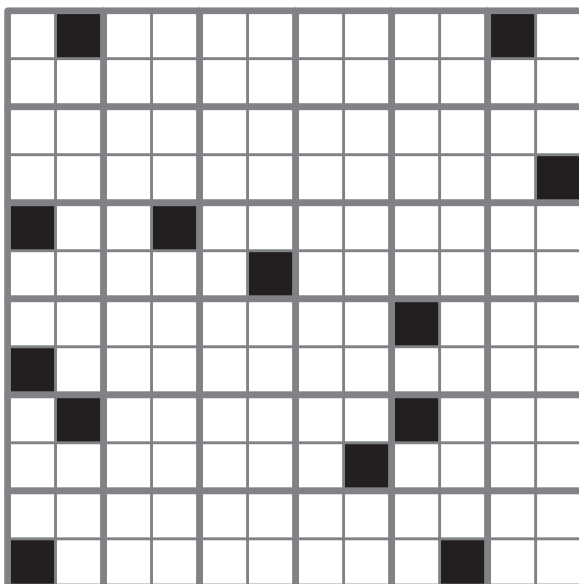
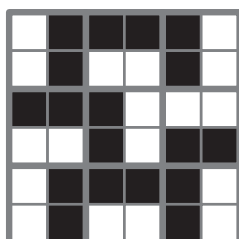
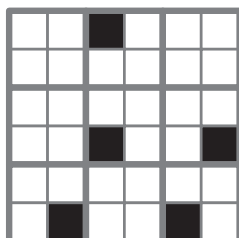
Sudoku

				3	
					5
		3			
4			2		
		5			



### 12. Windows

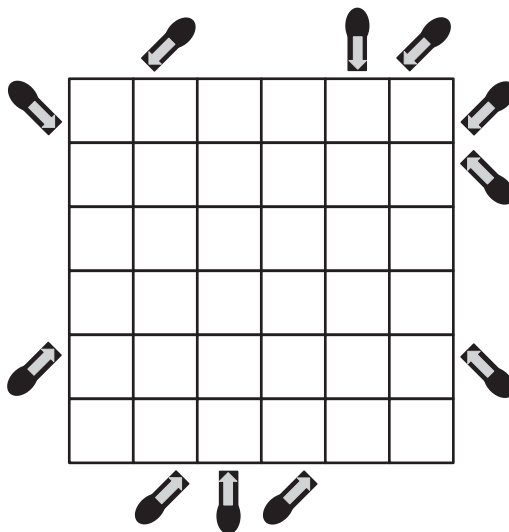
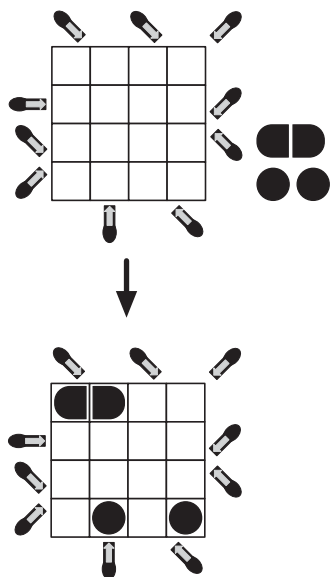
Blacken exactly two cells in each 2x2 window to form one connected set of black cells that has no holes. This continuous set doesn't touch itself, not even diagonally. There cannot be a 2x2 square of four cells with the same colour (black or white) anywhere in the grid.



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### 13. Cannonic Battleships

Locate all the ships in the given fleet into the grid horizontally or vertically, so that they don't touch each other, not even diagonally. There are exactly two cannons outside the grid aiming to a ship.



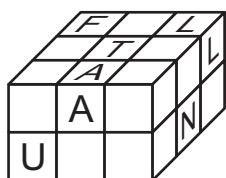
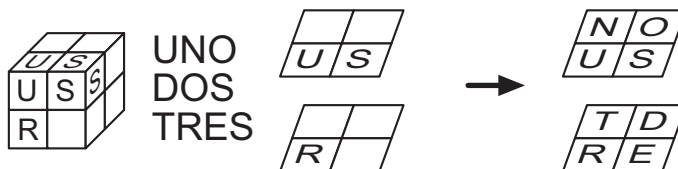
**80**  
POINTS



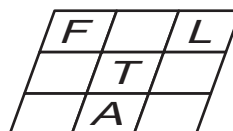


### 14. Up Numbers

Place letters into the prism so as to read all the given numbers by proceeding from letter to consecutive letter moving between face-to-face neighbouring cells. A letter can be used in the same number more than once, even consecutively.



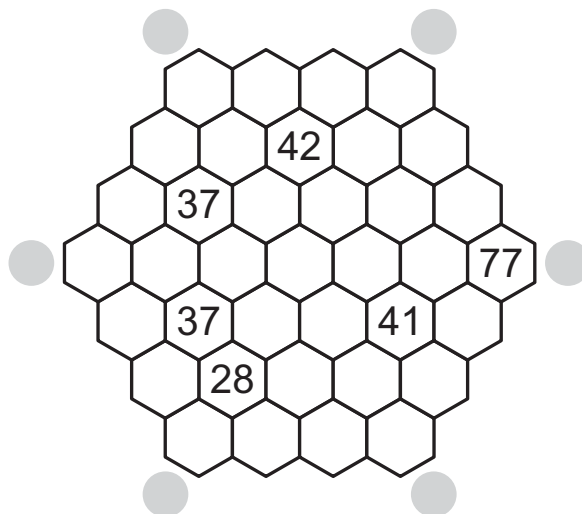
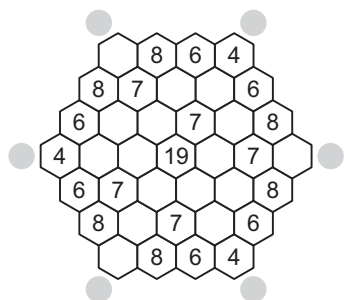
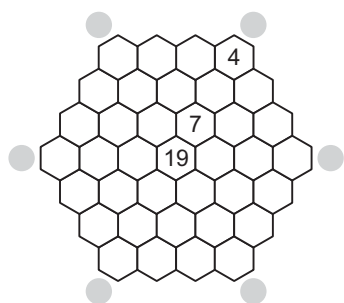
TASI  
 LUA  
 TOLU  
 FA  
 LIMA  
 ONO  
 FITU  
 VALU  
 IVA  
 SEFULU



**65**  
 POINTS

### 15. Arithmetic Series

Fill in some whole numbers (0, 1, 2, ...) into some cells of the grid so that in each direction (each row and each 60-degree diagonal, for a total of 21 directions) there are exactly three numbers. In each direction except the three main diagonals, numbers must form an arithmetic series.

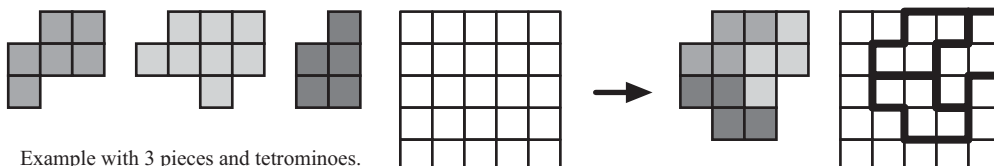


**60**  
 POINTS

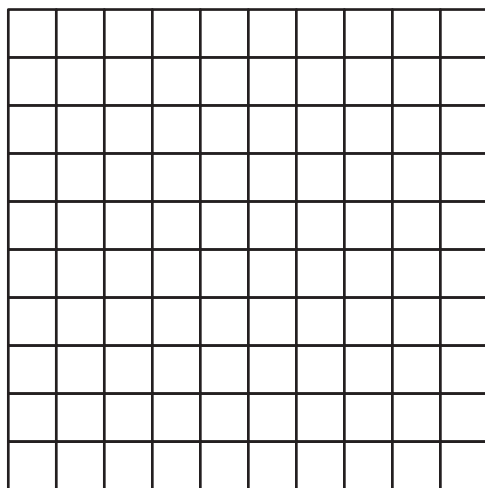


### 16. Coloured Pentominoes

Use the given pieces to make a shape (with or without holes) formed only of copies of the same pentomino (5 squares connected edge-to-edge), and nothing else. Each piece has the same colour on both sides; and cannot be folded. Pieces can overlap each other, but there cannot be more than two pieces at the same area. Colours of the resulting pentominoes must be different from each other. Draw the pentomino outlines into the given grid to show the answer.



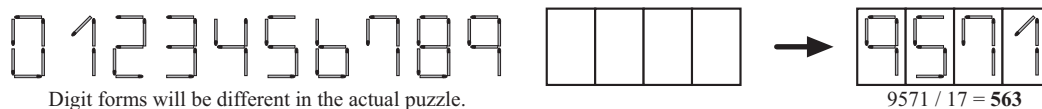
Example with 3 pieces and tetrominoes.



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### 17. Box Match

Write a 4-digit number (without a leading zero) with digits in the given matchstick forms, so that when this number is divided by the number of matchsticks it's formed of, the quotient is a whole number (0, 1, 2, ...). Maximize the quotient. Write the number into the given box. Numbers which give the top five highest possible quotients get 60, 40, 25, 15 and 10 points in order.



Digit forms will be different in the actual puzzle.



**?**  
POINTS

