



**19th World Puzzle
Championship
2010 Poland**

INSTRUCTION BOOKLET

October 24th

arrivals all day

21.00 - welcome party

October 25th

9.30 - 11.00 - fotosession

11.00 - 18.00 - Warsaw sightseeing

21.00 - technical meeting in the evening,

October 26th

9.30 - 13.00 championship (rounds 1-4) and general assembly

13.00 - 14.30 lunch

14.30 - 17.00 championship (rounds 5-7) and general assembly

Puzzle Academy with Thomas Snyder and Vladimir Portugalov

October 27th

9.30 - 13.00 championship (rounds 8-11) and general assembly

13.00 - 14.30 lunch

14.30 - 17.00 championship (rounds 12-14) and general assembly

free time and extra activities in the evening,

October 28th

9.00 - 9.15 - screen test

10.00-10.45 - team final

11.30-12.15 - individual semifinal

12.30-13.15 - individual final

13.15-14.30 - lunch

15.00-18.00 - visiting Żelazowa Wola - place of birth Frederic Chopina

18.30 - 20.00 - football match

21.00 - award ceremony and farewell party

October 29th

- breakfast and departures all day.

THE BREAKING RULES FOR INDIVIDUALS:

If two or more competitors have the same number of points, then the higher-ranked individual will be determined by taking into account, in order:

- 1 – fraction points for the Spherical Operations round
- 2 – the score of the Classic of WPC round
- 3 – the score of the Innovations round
- 4 – the score of the Assorted round
- 5 – the score of the Polimino round
- 6 – the score of the Married Puzzles round
- 7 – the total score from combined Broken Puzzles and Odd/Even Rounds

If the points from all above-mentioned criteria are the same, the competitors in question officially share the same place.

THE BREAKING RULES FOR TEAMS:

For the team classification there will be considered both the sum of points of all 4 competitors from the team and points from all team rounds.

If two or more teams have the same number of points, then the higher-ranked team will be determined by taking into account, in order:

- 1 – fraction points for both Sym-a-Pix and Spherical Operation rounds
- 2 – the total score from the team rounds
- 3 – the team with the lowest sum of the ranking places of the individual competitors of the team
- 4 – the team whose lowest-ranked competitor is placed on a higher position

RULES OF PLAYOFFS:

Individuals – semifinal:

There will be 2 stages of individual playoffs: semifinal and final. As a “puzzle pool” three puzzle sets will be prepared, each consisting of 7 puzzles. In these sets there will only be puzzles which are known from previous rounds (both individuals and teams) or basic types of puzzle, whose variants appeared in one of the previous round (e.g. in the Broken Puzzles round, it was the “Unlucky Angler” puzzle – a variant of the “Anglers” puzzle, so the classic “Anglers” puzzle can appear in the playoff puzzle set).

The 8 best competitors will qualify for the semifinal. The competitor who came 1st after all rounds will choose one set, which will be solved by all semifinalists in the semifinal. Moreover, there will be time bonus between 1st and other competitors, calculated according to the following formula:

$$\text{Bonus} = [1 - (\text{number of points of 2,3,...,8 competitor} / \text{number of points of 1st competitor})] * 30\text{minutes}.$$

The duration of the semifinal and final rounds is 45 minutes, but we suppose that it is enough to finish each of the 7-puzzle sets in 30 minutes, so that is the reason of this calculation.

Individuals - final:

The four fastest competitors in the semifinal will qualify to the final. The fastest one in the semifinal will choose a final set of 7 puzzles (different than in the semifinal). The third puzzle set will remain as a reserve. Time bonuses in the final will be calculated in a similar way as in the semifinal, but basing on the number of points of the best competitor before playoffs who qualified to the final. But, to calculate time bonus, other finalists will gain the scores of 3 contestants who were placed immediately after the best competitor in the semifinal. For example, if contestants who were placed on positions 2,3,6,7 qualify to the final, competitors 6,7 will take over the number of points of the contestants placed on positions 4,5, and the time bonus in the final will be calculated according to the following formula:

Between the 2nd and 3rd competitor (before the playoffs):

Bonus = [1-(points of 3rd competitor / points of 2nd competitor)]*30minutes.

Between the 2nd and 6th competitor (before the playoffs):

Bonus = [1-(points of 4th competitor / points of 2nd competitor)]*30minutes.

Between the 2nd and 7th competitor (before the playoffs):

Bonus = [1-(points of 5th competitor / points of 2nd competitor)]*30minutes.

Note that the time bonus in the final stage doesn't depend on the result in the semifinal.

Team final:

There will be only one stage of the team playoffs – the final. The 4 best teams will qualify for the final.

The time bonus will be granted in the same way as in the individual playoffs:

Bonus = [1-(number of points of 2,3 or 4 team/ number of points of 1st team)]*30minutes.

In the team final, there will be 4 individual tasks (as elements of a relay), and one task for all 4 competitors. Tasks will be arranged according to a growing level of difficulty. Each member of a team who ends the task and whose task is judged correct could go to the team task, but will receive only a limited amount of elements (1/9) that are necessary to solve the team task. The second team member will get the successive portion of elements (the next 1/9), the third one – 2/9, and the last one – 5/9.

Judging during playoffs:

In the semifinal, final, and team final, to each competitor (or team) will be assigned a proctor, who will check the correctness of solutions. In the individual playoffs, each competitor, after finishing one puzzle, may start the next one. The proctor will have exactly 1 minute (0,5 minute in the team final) to judge if the solution is correct or not. If it is correct, the proctor will raise the card with the name of the puzzle, which has just been solved. Each competitor will see which puzzles were solved by other competitors. If the task is incorrect, the proctor will give back the sheet with the puzzle, and the competitor must turn all sheets with puzzles over, and wait 0,5 minute. Each following mistake in the same task will cost the competitor 0,5 minute more (the 1st mistake – 0,5 minute waiting, the 2nd one – 1,0 minute waiting, etc.). It doesn't apply to the puzzle which the competitor decided to solve as last (in individual playoffs), and all tasks in the team final. These task competitors could start again immediately after the decision of the proctor.

In the team final, a team member, who finishes the task cannot go to the team task, but must wait 0,5 minute for the decision of the proctor.

Duration of playoffs:

Respective stages will last until:

- the semifinal: 4 competitors finish 7 puzzles correctly

- the final: 3 competitors finish 7 puzzles correctly

- the team final: 3 teams finish all puzzles correctly

If in one of these stages a required number of contestants doesn't finish all puzzles in 45 minutes, the next criteria are:

- the amount of correctly solved puzzles in a present stage

- a higher place before the playoffs

Between the 2nd and 3rd competitor (before the playoffs):

Bonus = [1-(points of 3rd competitor / points of 2nd competitor)]*30minutes.

NAME: TEAM:



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**Round 1 - individual
19 minutes**

WELCOME (1-19) 113 points

ORDER BONUS

Each competitor who solves all puzzles correctly before time limit will get 5 more points than competitors who finish after him. If only one competitor solves all puzzles correctly before time limit he will get 5 bonus points, if 3 competitors solve all puzzles correctly before time limit, the first one to finish will get 15 bonus points, 2nd -10, 3rd - 5, etc.

- | | |
|-------------------------------|--------|
| 1. Elastic Bands | 19 pts |
| 2. Numbers on Arrows | 18 pts |
| 3. Sums or Differences | 19 pts |
| 4. Sums | 19 pts |
| 5. Increasing Distances | 19 pts |
| 6. Arithmetic Transformations | 19 pts |

ORDER BONUS

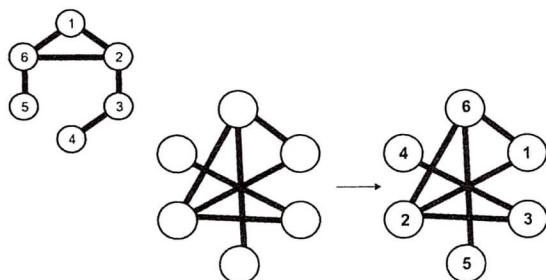
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TOTAL

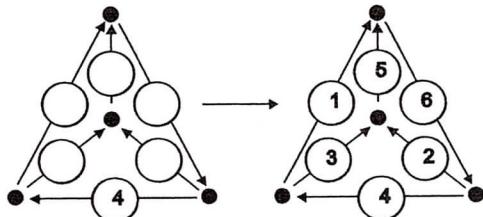
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COMMON RULES: It is necessary in each puzzle to put numbers 1-19 into the circles. Each puzzle can be solved independently from other puzzles. But the numbers from different puzzles, which are connected by the gray line are the same, and this information can simplify the solution and make the solution unique for each of these six puzzles. Each correct number gives 1 point, each wrong minus 1 point.

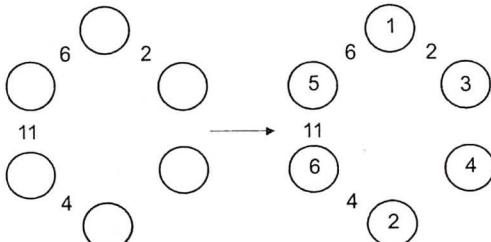
ELASTIC BANDS. Place numbers 1 through 19, each of them once, into the circles so that numbers, which are connected on the top diagram, are connected in the bottom diagram too.
Example for numbers 1-6.



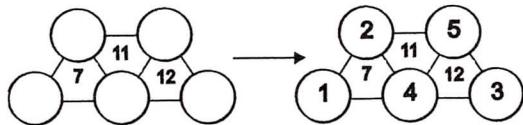
NUMBERS ON ARROWS
Place numbers 1 through 19, each of them once, in circles on the arrows. The sum of numbers on arrows pointing towards dot must be equal to the sum of the numbers on arrows leaving that dot.
Example for numbers 1-6.



SUMS OR DIFFERENCES
Place numbers 1 through 19, each of them once, into the circles. Each given number shows the sum or the difference between the numbers in the neighbors circles.
Example for numbers 1-6.



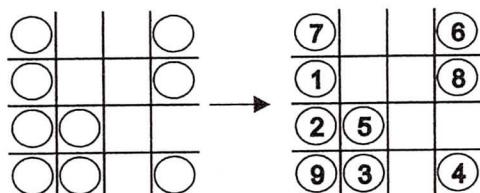
SUMS
Place numbers 1 through 19, each of them once, into the circles. Each given number is the sum of three numbers in the triangle.
Example for numbers 1-5.



INCREASING DISTANCES
Put the digits 1- 19 into the circles so that the distance between circles increases one after another:

$$| 1, 2 | < | 2, 3 | < \dots < | 18, 19 |$$

Example for numbers 1-9.



ARITHMETIC TRANSFORMATIONS
Place numbers 1 through 19, each of them once, into the circles. Each number (except first in a row) should be a result of arithmetic operation applied to the number from the left.
Example for numbers 1-4.

$$\begin{array}{ccccccc} \textcircled{1} & \times 4 & \textcircled{2} & /2 & \textcircled{3} & +1 & \textcircled{4} \\ & & & & & & \\ \downarrow & & & & & & \\ \textcircled{1} & \times 4 & \textcircled{4} & /2 & \textcircled{2} & +1 & \textcircled{3} \end{array}$$

NAME: TEAM:



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**Round 2 - individual
60 minutes**

CLASSIC OF WPC 300 points

Time bonus: 4 points for every full minute before the end of the round

- | | | |
|-------------------|------------|--|
| 1. Battleships | 2 + 15 pts | |
| 2. Easy as ABC | 7 + 20 pts | |
| 3. Four Winds | 4 + 26 pts | |
| 4. Hashi | 9 + 41 pts | |
| 5. Hitori | 3 + 23 pts | |
| 6. Kakuro | 3 + 23 pts | |
| 7. Paint it Black | 6 + 25 pts | |
| 8. Skyscrapers | 9 + 18 pts | |
| 9. Star Battle | 4 + 37 pts | |
| 10. Sudoku | 4 + 21 pts | |

BONUS POINTS

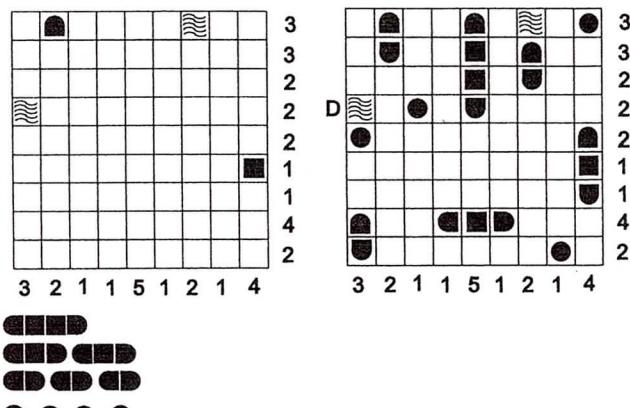
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TOTAL

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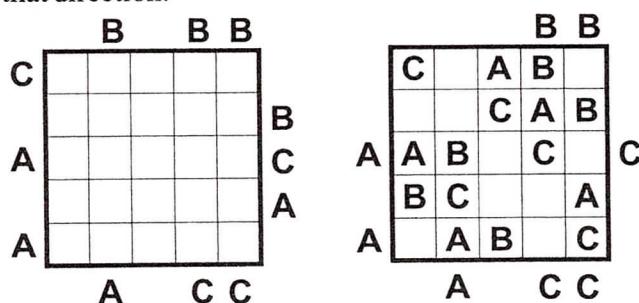
Battleships (2 + 15 Points)

Locate the position of the “Battleships” fleet given under the grid. The ships cannot touch each other, not even diagonally. Numbers outside the grid show the quantity of the cells occupied by the ships in that particular row or column. Ships cannot occupy the given water squares.



Easy as ABC (7 + 20 Points)

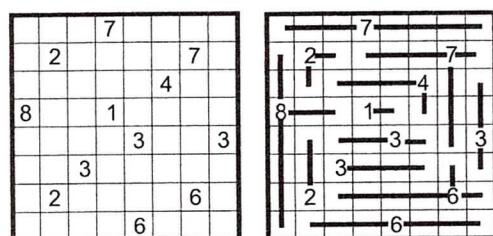
Fill the letters A, B, C (and D in the second grid) in the diagrams. Each letter occurs in each of the rows, columns exactly once. The letters outside the diagram indicate the letters you come across first from that direction.



Four Winds (4 + 26 Points)

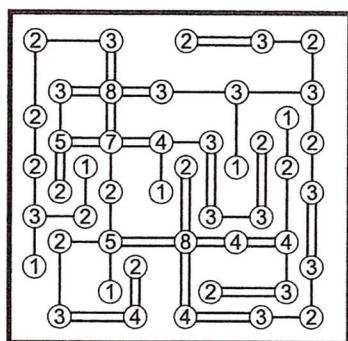
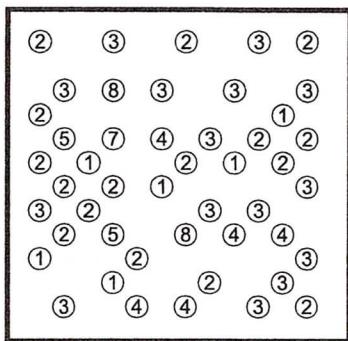


Draw one or more lines from each numbered cell so that each number indicates the total length of lines that are drawn from that cell, excluding the cell itself. Lines are either horizontal or vertical and connect the centers of adjacent cells without crossing or overlapping each other and the given numbers.



Hashi (9 + 41 Points)

The numbered circles are the islands. Connect all of the islands into a single connected group by drawing the bridges between the islands. The bridges must begin and end at distinct islands, travelling a straight line in between. They must not cross any other bridges or islands. They may only run orthogonally. At most two bridges connect a pair of islands. The number of bridges connected to each island must match the number on that island.



Hitori (3 + 23 Points)

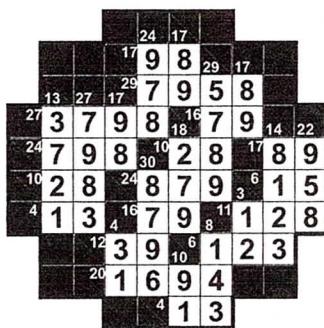
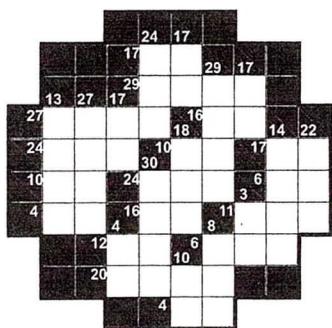
Paint out some cells so that there are no duplicate numbers in any row or column. Painted cells cannot share an edge and all the unpainted cells must be connected horizontally or vertically in a single group.

3	4	5	2	1	6
6	2	4	4	4	1
2	2	4	6	3	2
4	6	4	1	2	2
3	1	2	5	5	4
6	3	1	5	2	3

3	4	5	2	1	6
6	2	4	4	4	1
2	2	4	6	3	2
4	6	4	1	2	2
3	1	2	5	5	4
6	3	1	5	2	3

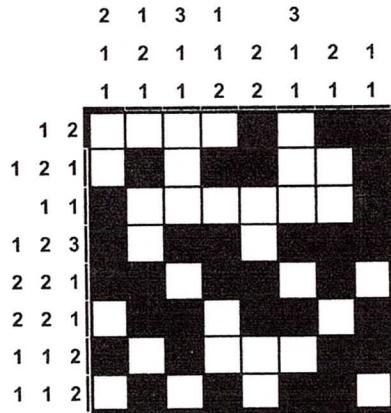
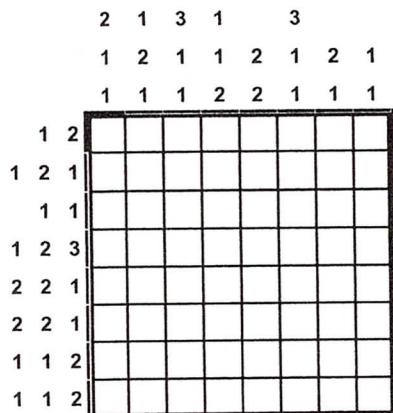
Kakuro (3 + 23 Points)

Enter a single digit from 1 to 9 in each empty square so that the horizontal sums of the digits will equal the number given on the left, and the vertical sums of the digits will equal the number given above. No digit can be repeated within sums.



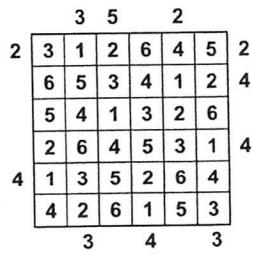
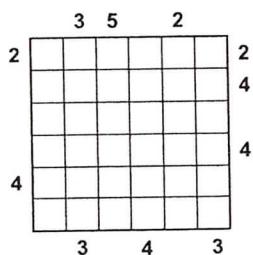
Paint it Black (6 + 25 Points)

Blacken some of the cells to find out what the hidden picture is. The numbers in the beginning of the rows and columns indicate in order the number of cells in each black stretch in that row or column. The black regions are separated by one or more empty cells.



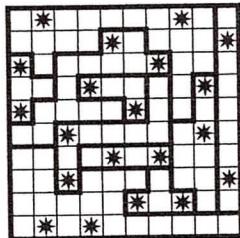
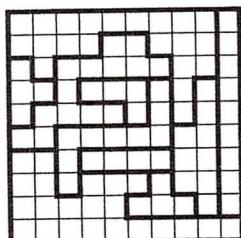
Skyscrapers (9 + 18 Points)

Fill in each cell of the grid with digits 1-5/1-6 as given (1-6 for the example), so that each digit appears exactly once in each row and in each column. Each digit inside the grid represents a building with the height of the digit itself. Numbers outside the grid indicate the number of buildings that can be seen by an observer looking into the grid in the corresponding direction, taking into account that higher buildings block the view of lower buildings from the observer.



Star Battle (4 + 37 Points)

Place exactly two stars in each row, each column and each outlined area. Stars have the size of one cell and cannot touch each other, not even diagonally.



Sudoku (4 + 21 Points)

6

Fill in the grid with the numbers 1 through 6/9 (1 through 9 in the example). Every row, every column and every 3x3 square must contain each digit exactly once.

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

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

NAME: TEAM:



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**Round 3 - individual
45 minutes**

MARRIED PUZZLES 225 points

Time bonus - 4 points for every full minute before the end of the round

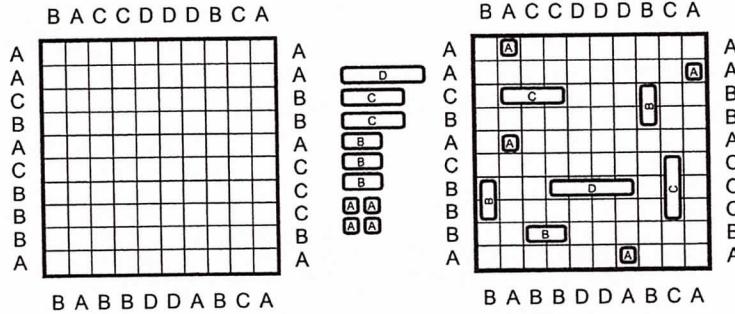
- | | |
|-----------------------|--------|
| 1. ABC of Battleships | 18 pts |
| 2. Fenced Estate | 25 pts |
| 3. Kropki Sudoku | 32 pts |
| 4. Masyu Loop | 14 pts |
| 5. Paint the Snake | 20 pts |
| 6. Skykuro | 38 pts |
| 7. Sudokuro | 39 pts |
| 8. Tapa Connection | 16 pts |
| 9. Tapa Island | 23 pts |

BONUS POINTS

TOTAL

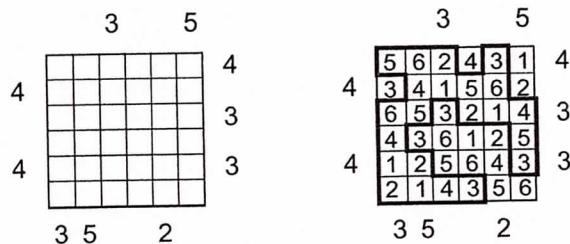
ABC of Battleships (18 Points)

Place the shown fleet (1 four-cells, 2 three-cells, 3 two-cells and 4 single-cell ships) in the grid, so that ships don't touch each other not even diagonally. Each ship's size is represented by one of the letters from the ABCD set (as shown). The letters near some of the (in example all) rows and/or columns represent the ship seen on the foreground of that position.



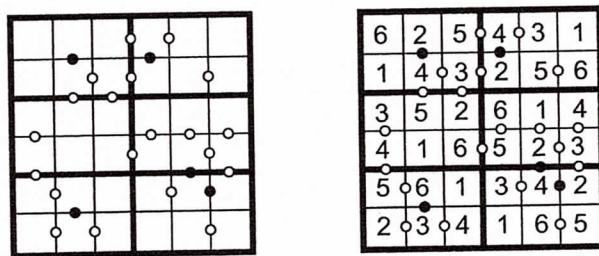
Fenced Estate (25 Points)

Place digits 1-6 on the grid, so that no digit is repeated in any row or column. Each digit represents a building with a height equal to the value of the digit. Digits outside the grid represent the amount of buildings visible from that place. Higher buildings always hide lower ones. Moreover, there is a loop to draw going through the grid lines. The loop parts cannot cross nor touch. All digits 1-3 in the grid represent the amount of borders of the grid cell (in which the digit is located), which are parts of the loop.



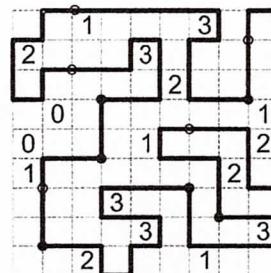
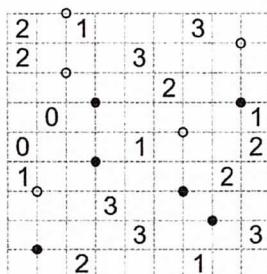
Kropki Sudoku (32 Points)

Fill the grid with digits 1-9, so that no digit is repeated in any row, column, or 3x3 square with bolded borders. All neighbouring grid cells containing digits with difference 1 have a white dot between them. All neighbouring grid cells, in which one digit is exactly two times higher than the other, have a black circle between them. Between the digits 1 and 2 there can be either a white or a black dot.



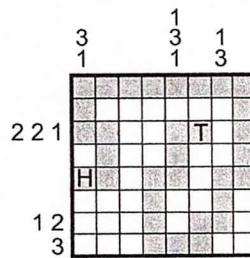
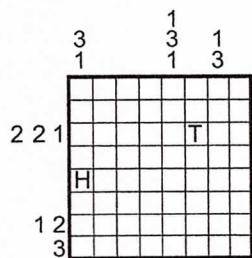
Masyu Loop (14 Points)

Draw a single closed loop along the grid lines, which do not touch or cross itself. Digits in cells indicate the amount of its edges used by the loop. The loop must turn in every black dot but cannot turn immediately before or after. And the loop cannot turn at any white circle but it must turn immediately before and/or after.



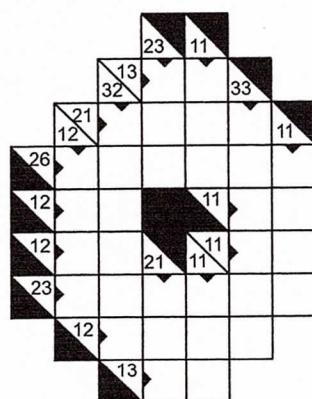
Paint the Snake (20 Points)

Fill some grid cells, so that the filled cells create a snake of the width of 1 cell, that cannot touch itself (not even diagonally). The head (H) and the tail (T) of the snake are given. Digits outside the grid represent, in order, the amount of filled fields in each filled segment in a respective row or column. Filled segments have to be separated with at least one unfilled grid cell.



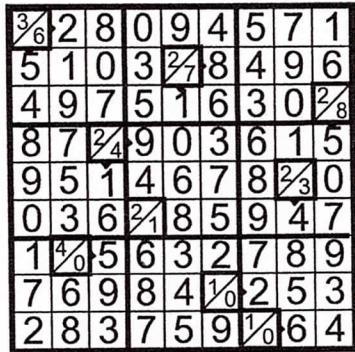
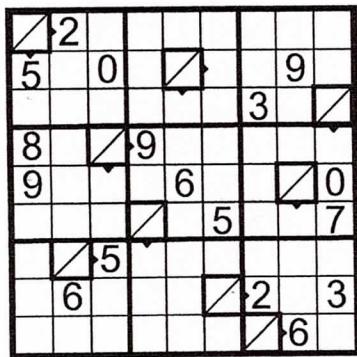
Skykuro (38 Points)

Place one digits from the 1-9 set in each empty cell of the diagram so that the horizontal sums of the digits are equal to the numbers given on the left and the vertical sums of digits are equal to the numbers given above. Digits in each sum cannot repeat. The digits inside the grid represent buildings with a height equal to the digits value. One of the digits in each sum indicates the amount of buildings visible from the sum in the row or column. Higher buildings hide lower ones.



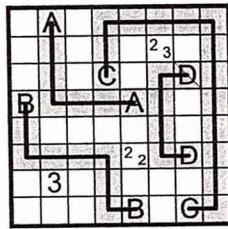
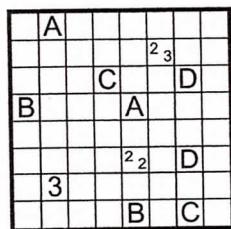
Sudokuro (39 Points)

Place digits 0-9 in the diagram, so that no digit is repeated in a row, column, nor 3x3 square with bolded borders. In grid cells containing a diagonal line there is a number to write into, which indicates the sum of all digits shown by every arrow from that cell. The tens digit should be placed in the upper-left part of the grid cell, and the units digit in the lower-right one. Digit 0 cannot be the tens digit.



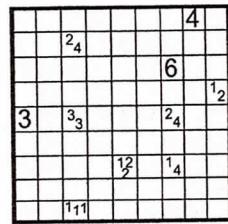
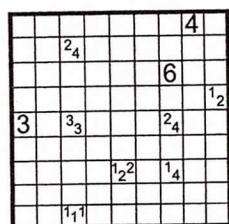
Tapa Connection (16 Points)

Connect same letters with lines going horizontally or vertically, so that no two lines touch or overlap. All fields with line parts have to be filled, so that there is a continuous filled area with no 2x2 square fully filled. Digits in some cells show the length of the group of filled grid cells neighbouring with that cell. If in any grid cell there is more than one digit, then there has to be at least one unfilled cell between groups of filled grid cells. Grid cells, which are not a part of any line going between the same letters, cannot be filled.



Tapa Island (23 Points)

Fill some grid cells, so that they make a continuous filled area with no 2x2 square fully filled. Digits in some cells show the length of the group of filled grid cells neighbouring with that cell. If in any grid cell there is more than one digit, then there has to be at least one unfilled cell between the groups of filled grid cells. Moreover – in every grid cell with digits exactly one digit represents the size of the area of unfilled cells (containing the field with the digit) surrounded by filled cells from each side.



TEAM:



ANACONDA: 900 points

The team score in this part will depend on the number of correctly solved puzzles.

Time bonus - 8 points for every full minute before the end of the round

<input type="checkbox"/>	1. Classic snake	1 puzzle	- 5 points
<input type="checkbox"/>	2. Stripy snake	2 puzzles	- 15 points
<input type="checkbox"/>	3. Japanese snake	3 puzzles	- 30 points
<input type="checkbox"/>	4. Number snake	4 puzzles	- 50 points
<input type="checkbox"/>	5. Dutch snake	5 puzzles	- 75 points
<input type="checkbox"/>	6. Finnish snake	6 puzzles	- 105 points
<input type="checkbox"/>	7. Snake.by	7 puzzles	- 140 points
<input type="checkbox"/>	8. Spiral snake	8 puzzles	- 180 points
<input type="checkbox"/>	9. Persistence of memory	9 puzzles	- 225 points
<input type="checkbox"/>	10. Knight snake	10 puzzles	- 275 points
<input type="checkbox"/>	11. Akkara snake	11 puzzles	- 330 points
<input type="checkbox"/>	12. Slitherlink snake	12 puzzles	- 390 points
<input type="checkbox"/>	13. The BOZ (Black and white snake)	13 puzzles	- 455 points
<input type="checkbox"/>	14. Pathfinding snake	14 puzzles	- 525 points
<input type="checkbox"/>	15. Every third turn	15 puzzles	- 600 points
<input type="checkbox"/>	16. Tapa snake	16 puzzles	- 680 points
<input type="checkbox"/>	17. Pentamino snake	17 puzzles	- 765 points
<input type="checkbox"/>	18. Sum snake	18 puzzles	- 855 points
<input type="checkbox"/>	19. 1-2-snake	19 puzzles	- 950 points

TIME BONUS

TOTAL

ROUND 4 - TEAM

ANACONDA

COMMON RULE: In every 10x10 grid (7x7 in the example) draw a single 45-cells (21 in the example) long 1 cell-wide snake, not touching itself even diagonally. The central 23rd cell (11th in the example) is marked with the circle. The single snake going through all 19 grids should finally appear.

ADDITIONAL RULES

Classic snake

Numbers outside the grid show the amount of cells occupied by the snake in corresponding rows/columns.

Stripy snake

Numbers at the top/bottom show the amount of cells occupied by the odd cells of the snake in corresponding columns, numbers on the right/left show the amount of cells occupied by the even cells of the snake in corresponding rows.

Japanese snake

Numbers outside the grid show the length of continuous blocks occupied by the snake in corresponding rows/columns in order. There must be at least one empty cell between those blocks.

Number snake

Numbers outside the grid show the sum of digits in cells occupied by the snake in corresponding rows/columns. Digits in occupied cells cannot repeat within any row/column.

Dutch snake

The snake should make a turn in every cell with a black dot and go straight through every cell with a white dot.

Finnish snake

The snake should go through all the dotted cells.

Snake.by

The snake should occupy exactly three cells in outlined areas. Ends of the snake should be in the grey areas.

Spiral snake

Divide the grid into some areas with central symmetry. All the symmetry points are given. Areas should be symmetrical with regard to the cells occupied/unoccupied by the snake.

Persistence of memory

All given highlighted regions contain parts of the snake. In the regions having the same shape snake should occupy the same cells and should have the same shape in these cells. Ends of the snake cannot be in the highlighted regions.

ROUND 4 - TEAM**ANACONDA****Knight snake**

The snake cannot go through the numbered cells. Numbers show the amount of cells occupied by the snake reachable by the one move of the chess knight from cell with a number.

Akkara snake

Numbers show the amount of touching (also diagonally) cells occupied by the snake if the cell with number is empty OR the amount of empty touching (also diagonally) cells if the cell with number is occupied by the snake.

Slitherlink snake

The snake cannot go through the numbered cells. Numbers show the amount of cells occupied by the snake in four neighbouring cells.

The Boz (Black and white snake)

The snake moves like grey-white-grey-....-white-grey cells.

Pathfinding snake

Going from one end to another the exact word “WPC2010” should be read only once.

Every third turn

Starting from any end of the snake every third its turn contains the number showing the amount of snake's cells seen from that corner, including the cell with the number itself.

Tapa snake

Number(s) indicate the length of occupied by snake cell blocks on its neighbouring cells. If there's more than one number in a square, there must be at least one empty cell between the occupied cell blocks. The snake couldn't occupy cells with numbers.

Pentamino snake

The snake should be formed of the given (right to diagram) pentaminoes (could be rotated and/or mirrored) and the grey cells placed in the grid and cannot overlap the cells with the letters. Letters inside the diagram indicate the pentamino figures touching (also diagonally) the cell with those letters.

Sum snake

The cells occupied by the snake are enumerated from some end to another with the numbers 1 through 45. Numbers in the grid show the sum of all cells touching the cell with the number. The snake couldn't occupy cells with numbers.

1-2-snake

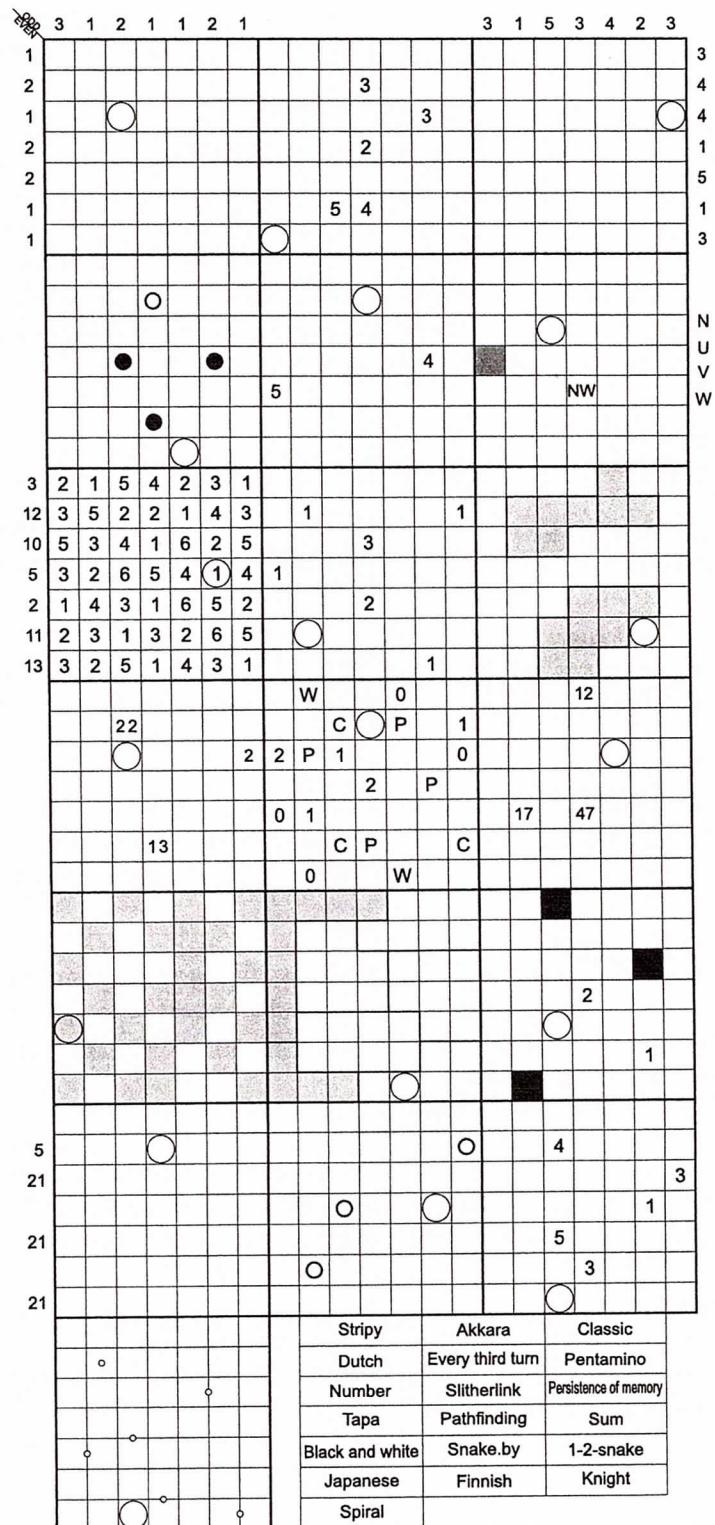
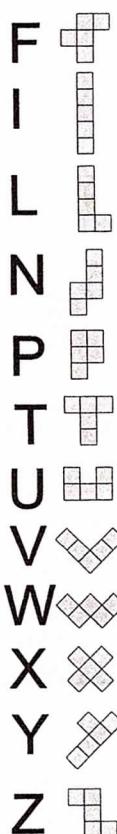
From some end of the snake to another the sequence 1-2-1-...-1-2 should be read. Every row/column should contain digits 1 and 2 exactly once. Some digits are already given. The snake cannot overlap the black cells.

ROUND 4 - TEAM

ANACONDA

Example

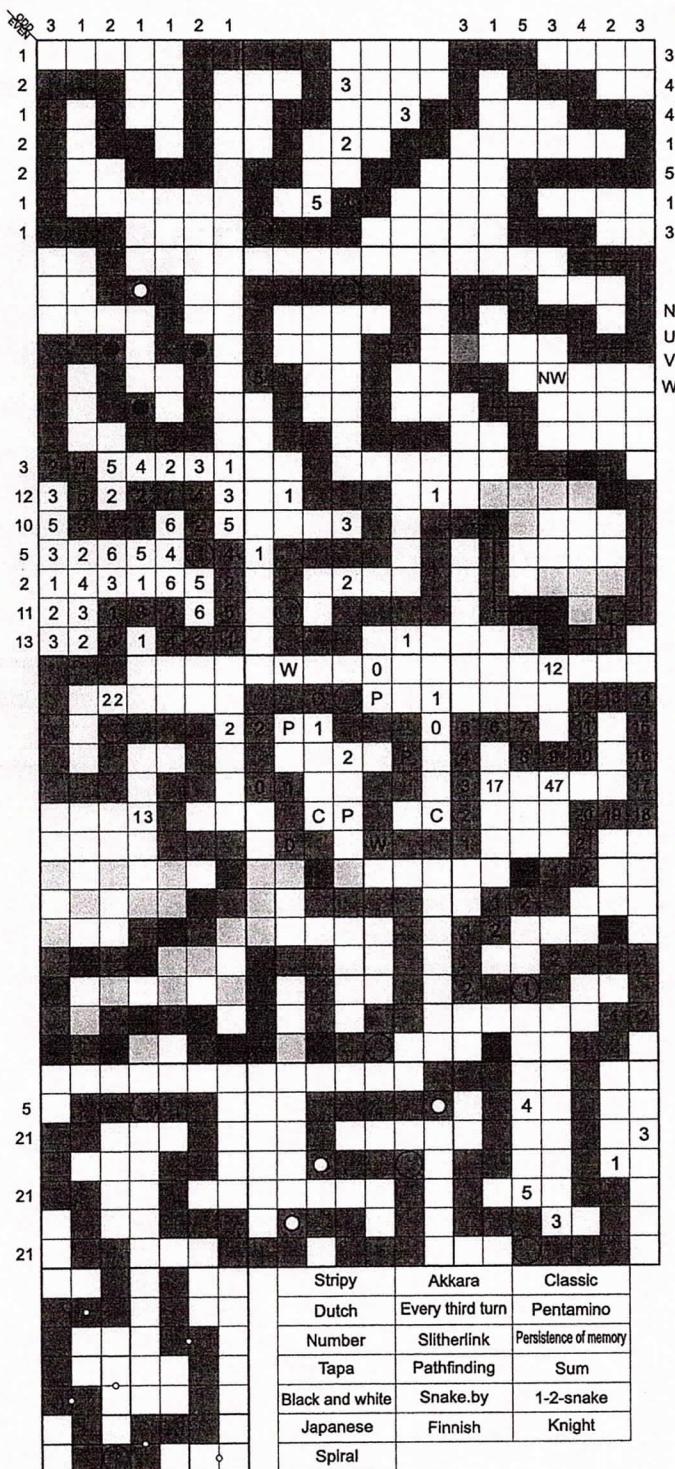
Pentomino letters



ROUND 4 - TEAM

ANACONDA

Example solution



NAME: TEAM:



**19th World Puzzle
Championship
2010 Poland**

**Round 5 - individual
60 minutes**

INNOVATIONS 300 points

Time bonus: 4 points for every full minute before the end of the round

- | | | |
|-----------------------------|-------------|--|
| 1. Araf | 9 + 26 pts | |
| 2. Different Squares | 5 + 22 pts | |
| 3. Hidden Sums | 8 + 30 pts | |
| 4. Increasing Path | 2 + 12 pts | |
| 5. Lost Sums | 3 + 18 pts | |
| 6. Nonconsecutive in Series | 5 + 30 pts | |
| 7. Prime Numbers | 7 + 27 pts | |
| 8. Roman | 5 + 14 pts | |
| 9. Unknown Fleet | 2 + 32 pts | |
| 10. XO-Chain | 11 + 32 pts | |

BONUS POINTS

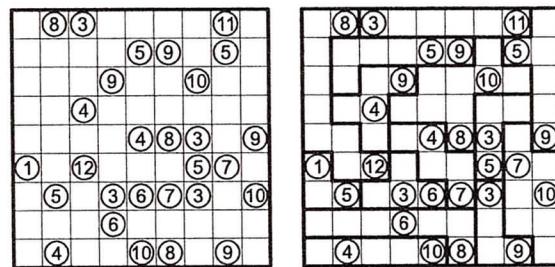
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TOTAL

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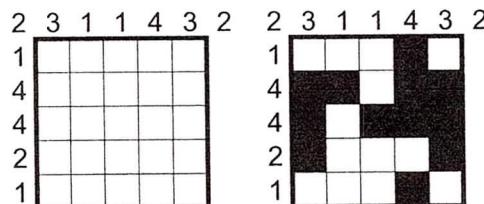
Araf (9 + 26 Points)

Divide the grid into some regions formed of adjacent squares. Each region should contain exactly two given numbers. The size of each region should be a value (in unit squares) between the two numbers inside that region.



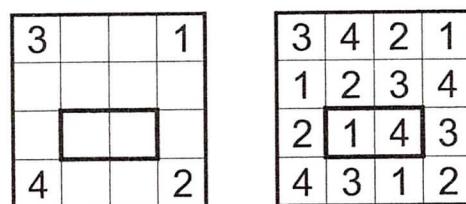
Different Squares (5 + 22 Points)

Blacken some cells in the grid, so that each 2x2 square will be blackened differently. Digits outside the grid indicate the amount of blackened cells in a corresponding row, column or diagonal.



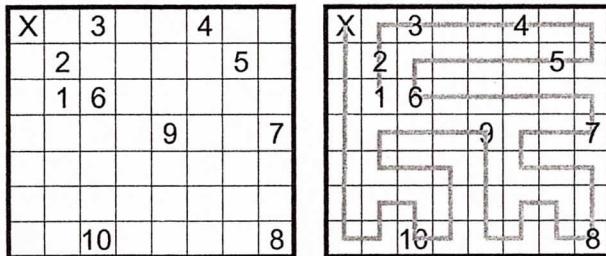
Hidden Sums (8 + 30 Points)

Fill the grid with digits 1-6/1-8 (1-4 in the example), so no digit is repeated in any row or column. Areas with bolded borders should contain number (single- or double-digit), that is the sum of all digits neighbouring with this area by side (not diagonally). All areas with such attribute are bordered.



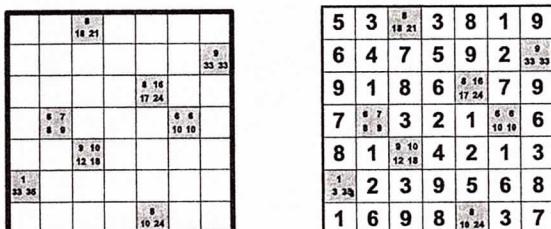
Increasing Path (2 + 12 Points)

Draw a continuous line going through each cell in the grid exactly once. The line starts in the cell with digit 1 and ends in the cell marked with X. The line has to go through grid cells with numbers in ascending order and has to go through exactly N cells going from cell with number N to cell with number N+1 (or with mark X).



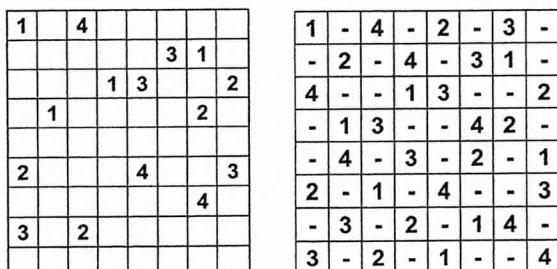
Lost Sums (3 + 18 Points)

Fill the grid with digits 1-9. Numbers inside a shaded cell indicate the sums of all white cell blocks that can be seen from that cell in four main directions (up, down, left, right). No digit may be repeated within a single block. Cell blocks are visible until they meet another shaded cell or the edge of the grid. Given sums do not indicate any direction.



Nonconsecutive in Series (5 + 30 Points)

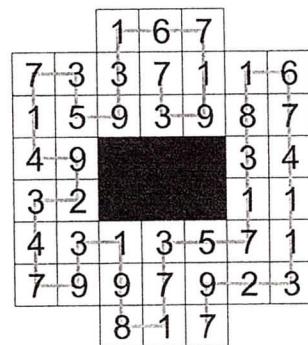
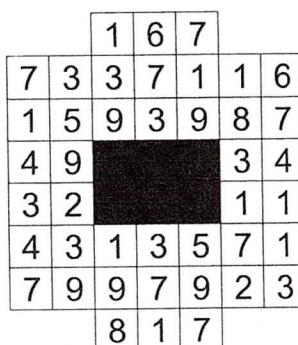
Place in the grid digits 1-6/1-4 (1-4 in the example), at most one in the cell, so that each digit occurs exactly once in each row and column. Treat series of digits (horizontal or vertical) not separated by empty cells (signed by “-“) as numbers. The number cannot contain consecutive digits. For example three neighbouring cells filled by digits cannot be occupied by digits 142 (because 1 and 2 are consecutive).



Prime Numbers (7 + 27 Points)

Draw a continuous line in the grid, going through each grid cell exactly once. Digits of following line cells should create a series of all prime numbers lower than 60 in smaller diagram and lower than 100 in bigger one (in the example lower than 100). Each digit in the grid has to belong to exactly one prime number. Successive prime numbers on the line have to contain different digits.

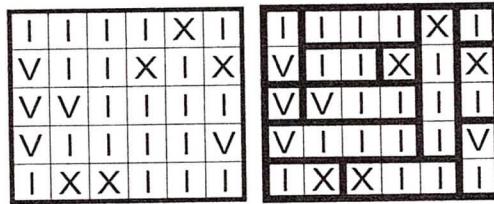
11	37	67
13	41	71
17	43	73
19	47	79
23	53	83
29	59	89
31	61	97



Roman (5 + 14 Points)

Find and mark in the grids all numbers 1-15/1-19 (1-13 in the example), written in Roman, so that each cell will be part of exactly one number. Numbers can be read only from left to right and from top to bottom.

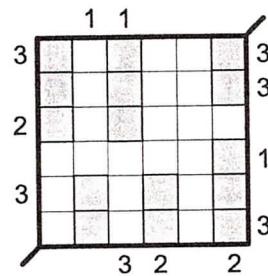
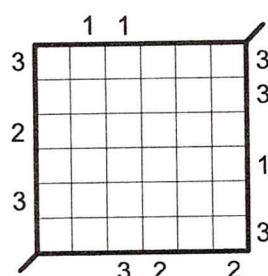
I	VIII
II	IX
III	X
IV	XI
V	XII
VI	XIII



Unknown Fleet (2 + 32 Points)

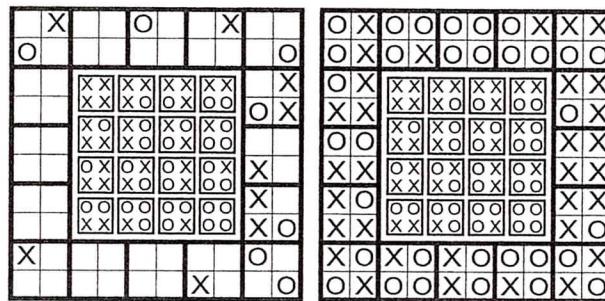
Locate a fleet of ships into the diagram. The ships cannot touch each other even at a point. The numbers at the top and the left indicate the number of ships in that row and column. And the numbers at the bottom and the right indicate the number of cells occupied by ships in that row or column.

The used fleet is unknown, but each ship has a 1-cell width.



XO-Chain (11 + 32 Points)

Sixteen 2x2 squares form a chain. Fill in the squares with X and O signs. All squares should be different - all possible variations of X and O are used (the complete set is given inside the chain). Neighbouring squares should differ by exactly one sign. Some signs are already placed.



NAME: TEAM:



**19th World Puzzle
Championship
2010 Poland**

**Round 6 - individual
45 minutes**

EVEN/ODD 225 points

Time bonus: 4 points for every full minute before the end of the round

- | | |
|-----------------------------|-------------|
| 1. Battleship Even/Odd | 13 + 23 pts |
| 2. Crossnumber Even/Odd | 34 pts |
| 3. Five Squares Even/Odd | 27 pts |
| 4. Sapper Even/Odd | 8 + 45 pts |
| 5. Skyscrapers Even/Odd | 22 pts |
| 6. Slitherlink Even/Odd | 10+29 pts |
| 7. Sudoku Diagonal Even/Odd | 14 pts |

BONUS POINTS

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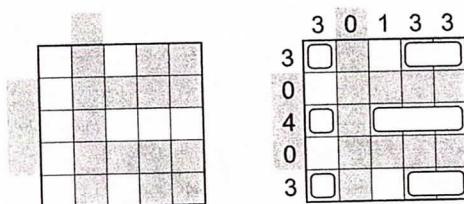
TOTAL

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1. Battleship Even/Odd (13 + 23 Points)

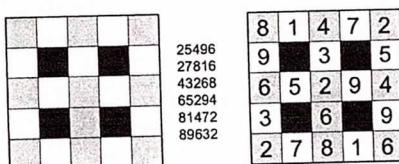
Position the standard 10-ship fleet - 1 x 4, 2 x 3, 3 x 2, 4 x 1 (6-ship fleet in the example - 1 x 3, 2 x 2, 3 x 1) horizontally or vertically into the grid. If a ship is placed on even number of cells, it must be placed on grey cells only. If a ship is placed on odd number of cells, it must be placed on white cells only. Numbers on the sides reveal the number of ship segments on the respective row or column. Grey cells outside the grid contain even number, white cells outside the grid contain odd number.

It is enough to place all ships correctly, you do not have to write all numbers around the grid.



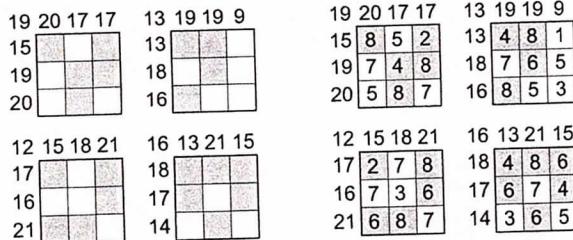
2. Crossnumber Even/Odd (34 Points)

Put given numbers into the grid across or down, one digit per cell. Grey cells contain even digits, white cells contain odd digits.



3. Five Squares Even/Odd (27 Points)

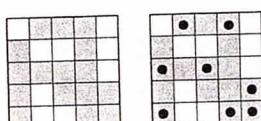
Enter a single digit from 1 to 9 (1 to 8 in example) into each of the empty cells so that the sum of numbers in each across, down and diagonal is equal to the value given to the left, sum of numbers in each across, down and diagonal is equal to the value given to the left, top, top left or top right, respectively. No digit may be repeated in a single row, column or main diagonal. To solve that puzzle you must use exactly one number one, two numbers two, three numbers three, four numbers four, five numbers five, six numbers six, seven numbers seven, eight numbers eight and nine numbers nine (one number one to eight numbers eight in example). Grey cells contain even numbers, white cells contain odd numbers.



4. Sapper Even/Odd (8 + 45 Points)

Place in free cells some mines, no more than one per cell, so that each number shows the quantity of mines in the surrounding cells. Grey cells contain even numbers, white cells contain odd numbers. Mines can be placed only in grey cells.

It is enough to put all mines correctly, you do not have to write all numbers inside the grid.



5. Skyscrapers Even/Odd (22 Points)

Fill in each cell of the grid with digits 1 to 7 as given (1 to 4 in the example), so that each digit appears exactly once in each row and in each column. Each digit inside the grid represents a building with the height of the digit itself. Numbers outside the grid indicate the number of buildings that can be seen by an observer looking into the grid in the corresponding direction, taking into account that higher buildings block the view of lower buildings from the observer. Grey cells contain even numbers, white cells contain odd numbers (also outside the grid).

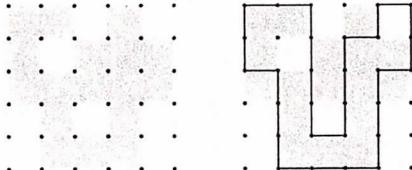
2	3
2	

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

6. Slitherlink Even/Odd (10 + 29 Points)

Draw a single continuous loop by connecting neighbouring dots horizontally or vertically. The numbers inside the grid indicate how many edges of a cell are used for the loop. Grey cells contain even numbers, white cells contain odd numbers. The loop cannot touch or cross itself. There are no cells with number 0 in the grid.

It is enough to draw correct loop, you do not have to write all numbers inside the grid.

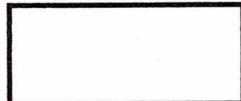


7. Sudoku Diagonal Even/Odd (14 Points)

Fill in the grid so that every row, every column, every 3x3 box and two main diagonals contains the digits 1 to 9 (1 to 4 in example). Grey cells contain even numbers.

4			
			3

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



TEAM:



**19th World Puzzle
Championship
2010 Poland**

**Round 7 - team
30 minutes**

SYM-a-PIX 600 points

Sponsor of round - Conceptis Puzzles

The object is to reveal a hidden picture by sticking small pieces of coloured paper (labels) and outlining areas around each dot so that its shape is rotationally symmetrical to the dot, its color matches the color of the dot, there are no other dots inside it and no squares are left out at the end of the solution.

Each team will receive 2 markers and a sufficient number of labels

Scoring:

For each correctly filled cell: 2/3 point.

A grid cell will be judged correctly filled if these two terms are fulfilled:

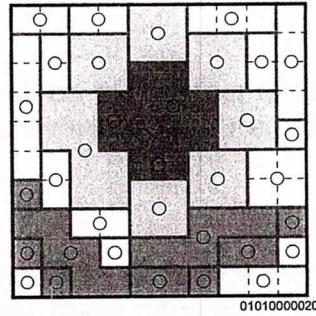
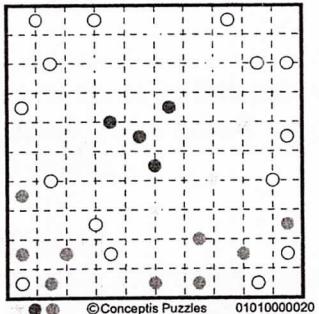
- 1) a label in appropriate colour is stuck on the cell
 - 2) the cell belongs to the area which is fully and correctly outlined by a marker
- For cell inside areas with white dots, it is enough to fulfill only 2nd term

If in a grid cell a label in inappropriate colour will be stuck, the team will get a penalty: - 1 point.
Solutions will be checked immediately after the end of the round in the presence of one team member.

We will not consider any protests after the solution is confirmed by a team member.

Total amount of points will be rounded to the closest integer number.

Example:



SCORE

NAME: TEAM:



19th World Puzzle Championship 2010 Poland

Round 8 - individual 25 minutes

SPRINT 125 points

The individual score in this part will depend on the number of correctly solved puzzles. Time bonus - 4 points for every full minute before the end of the round.

ORDER BONUS

Each competitor who solves all puzzles correctly before the time limit will get 5 more points than competitors who finish after him. If only one competitor solves all puzzles correctly before the time limit he/she will get 5 bonus points, if 3 competitors solve all puzzles correctly before the time limit, the first one to finish will get 15 bonus points, 2nd -10, 3rd - 5, etc.

1-2. 1-2-3-4 Dividing		
3-4. 1-9-loop	1 puzzle - 2 points	11 puzzles - 49 points
5-6. Blackout Math	2 puzzles - 4 points	12 puzzles - 57 points
7-8. Checkers Board	3 puzzles - 7 points	13 puzzles - 65 points
9-10. Dutch loop	4 puzzles - 10 points	14 puzzles - 74 points
11-12. Loopfinder	5 puzzles - 14 points	15 puzzles - 83 points
13-14. Tapa	6 puzzles - 18 points	16 puzzles - 93 points
15. Football	7 puzzles - 23 points	17 puzzles - 103 points
16. L-shapes	8 puzzles - 29 points	18 puzzles - 114 points
17. Simple loop	9 puzzles - 35 points	19 puzzles - 125 points
18. Square Division	10 puzzles - 42 points	
19. Square Route		

BONUS POINTS

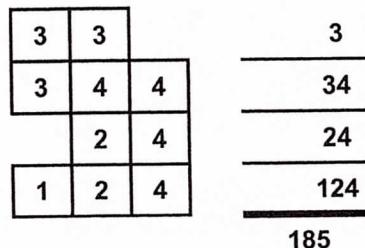
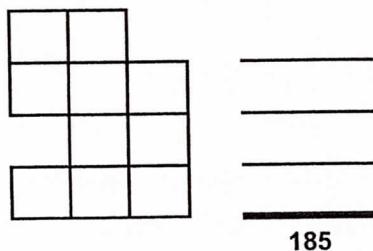
100

TOTAL

1000

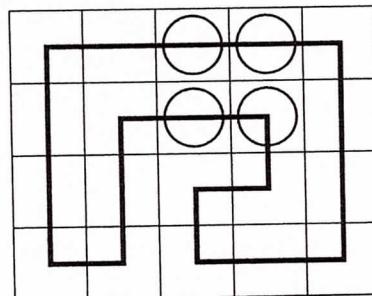
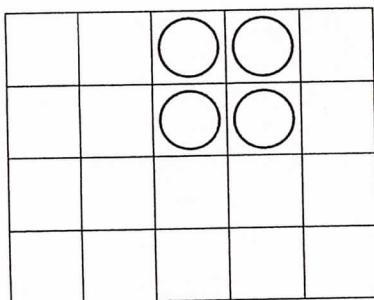
1-2-3-4 Dividing

Divide the grid into four areas of different sizes (1 to 4). Then write in each row the number, which is created by areas sizes in this row, used as digits. The block of a few cells from the same area gives only one digit. Make dividing which provide the given sum of written numbers.



1-9-loop

Draw a single closed loop going only vertically and horizontally and passing through every cell exactly once. Lengths of the parts of the loop connecting the cells with the circles should alter in a way 1-9-1-9-...



Blackout math

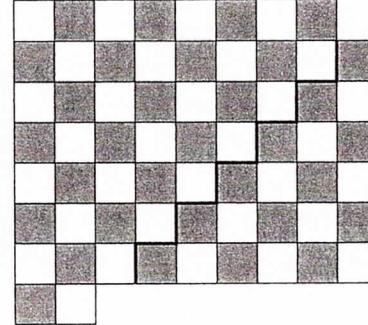
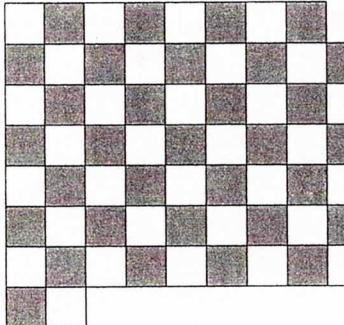
Paint exactly two cells black to form a correct equation. Standard algebra rules are followed, so multiplication and division must be calculated before addition and subtraction.

$$1 \boxed{5} \times 5 + 2 = 1 + 5 \times 4 / 2$$

$$1 \boxed{5} \times \boxed{5} + \boxed{2} = \boxed{1} + \boxed{5} \times \boxed{4} / \boxed{2}$$

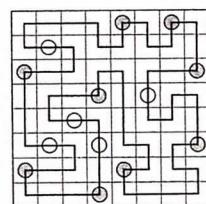
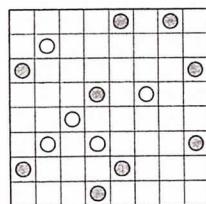
Checkers board

Cut the shape in two pieces along the sides of the squares. As a result you will have two shapes, which connected together will form a checkers board (8x8). The shapes can be rotated, but not mirrored.



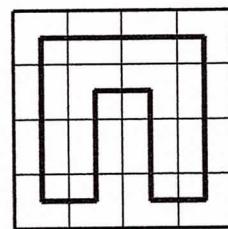
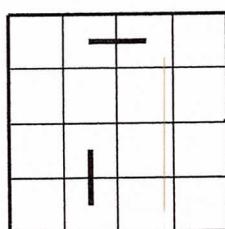
Dutch loop

Draw a single closed loop going only vertically and horizontally and passing through every cell exactly once. The loop should pass straight through the cells with the white circles and should make a turn in the cells with the grey circles.



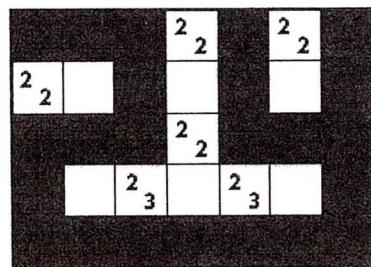
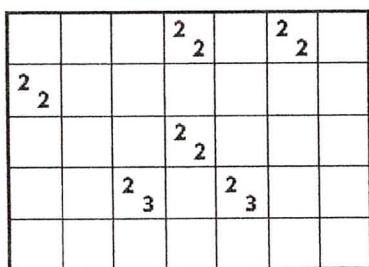
Loopfinder

Find a single closed loop that passes through every square exactly once and never crosses itself. The path travels horizontally and vertically, but never diagonally. The loop must contain the given fragments.



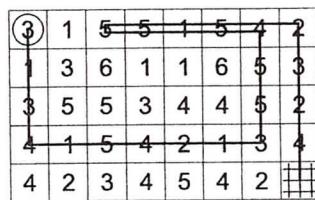
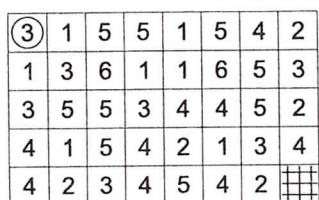
Tapa

Paint some squares to create a continuous wall. Number(s) in a square indicate the length of black cell block(s) in its neighbouring cells. If there is more than one number in a square, there must be at least one white cell between the black cell blocks. Painted cells cannot form a 2x2 square or larger. There are no wall segments on cells containing numbers.



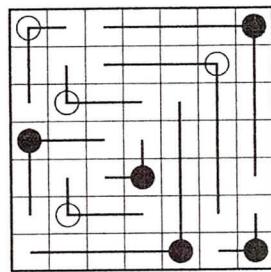
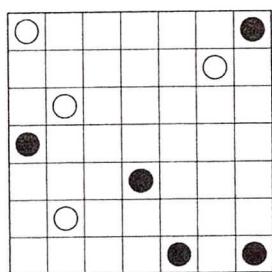
Football

Find a way to move the ball from the top left corner into the bottom right corner. With every turn the ball moves in any vertical or horizontal direction for as many cells as the number in the cell it currently occupies.



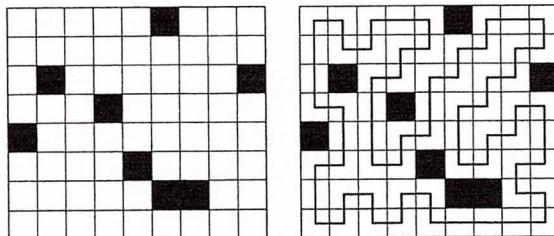
L-shapes

Divide the grid into some L-shaped figures. The circles are the corners of those figures. Figures with the black circle should have the legs of the same size. Figures with the white circle should have the legs of the different size.



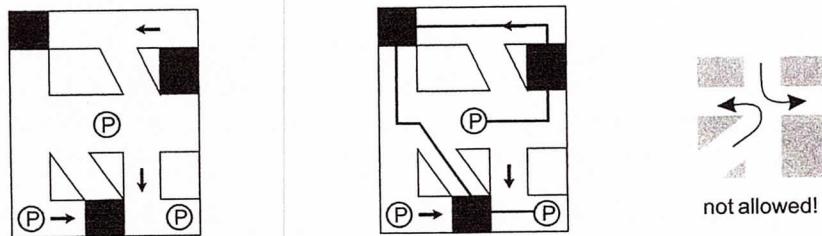
Simple loop

Draw a single closed loop going only vertically and horizontally and passing through every white cell exactly once..



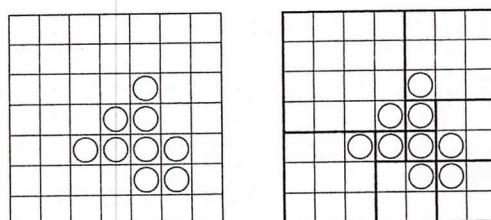
Square route

Find a route that begins at one of the three parking places (P), goes through all the buildings and one more parking place and ends at the third parking place. At no point will your route cross or overleap itself. Note that some of the streets have one-way segments (indicated by arrows); these only run between consecutive intersections. At the rotary traffic goes counter clockwise.



Square division

Divide the grid into some squares so that each square contains exactly one circle.



NAME: TEAM:



Round 9 - individual 90 minutes

ASSORTED 450 points

Time bonus - 4 points for every full minute before the end of the round

1. 2D Magic	23 pts
2. 25 Again	26 pts
3. A to Z Crisscross	24 pts
4. Akari	8 pts
5. Alternative Loop	19 pts
6. Barriers	29 pts
7. Double Arrows	48 pts
8. Geometric Shapes	23 pts
9. Hexa Masyu	44 pts
10. Honeycomb Islands	11 pts
11. Hula-Hoop	39 pts
12. Irregular Tapa	21 pts
13. Kenken	30 pts
14. Magic Summer	7 pts
15. OoSphere	14 pts
16. POLywords	35 pts
17. Trapeziums	17 pts
18. Tren	20 pts
19. Wittgenstein Briquet	12 pts

BONUS POINTS

TOTAL

2D Magic (23 Points)

Fill in the grid with different 2-digit numbers (first digit must be always bigger). Digits used for these numbers cannot be repeated in rows, columns and main diagonals.

8			5	1	
					4
2	8				
	0		7	5	

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

25 Again (26 Points)

Fill the table with numbers from 1 to 25, starting from the cell with “1” and writing each next number in one of eight neighbouring cells. None of two numbers in the same row or column can give the sum ending with “0”.

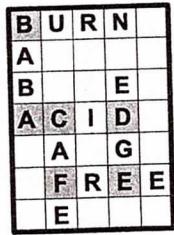
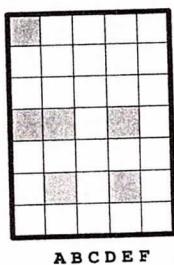
1			25		
		17			
	8				

1	3	14	25	24
2	4	15	13	23
5	11	12	16	22
6	10	17	18	21
7	8	9	19	20

A to Z Crisscross (24 Points)

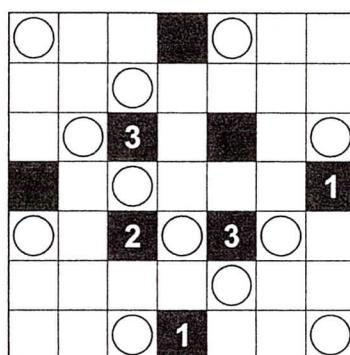
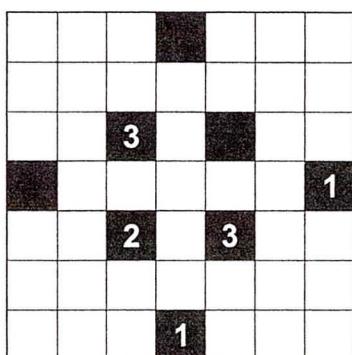
Place the given 20 words into the grid crisscross style (words appear either across or down and all words formed in the grid appear in the word list), so that all words are interconnected and there are exactly 26 word intersections – each in one of the highlighted squares. Additionally, each of the letters from A to Z (A to F for the example) appears exactly once in the highlighted squares.

ACID
BABA
BURN
CAFE
EDGE
FREE



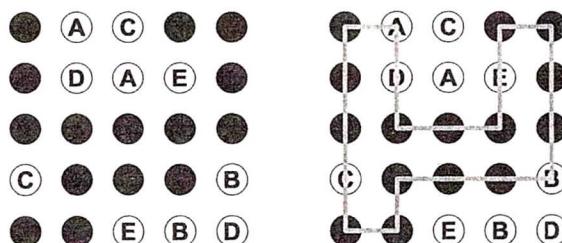
Akari (8 Points)

Place light bulbs (circles) so that every square in the grid is lit or contains a light bulb. Numbered cells indicate how many light bulbs are next to it, horizontally and vertically. Light bulbs may go in any white/empty cell and illuminate all the cells vertically and horizontally from it to a black cell or the edge of the board, whichever comes first, but no light bulb may illuminate any other light bulb.



Alternative Loop (19 Points)

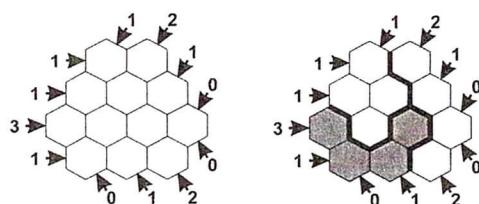
Draw a single closed noncrossing loop passing through each black circle exactly once, connecting neighbouring circles with horizontal or vertical lines. For each pair of identical letters, one is visited by the loop and the other is not.



Barriers (29 Points)

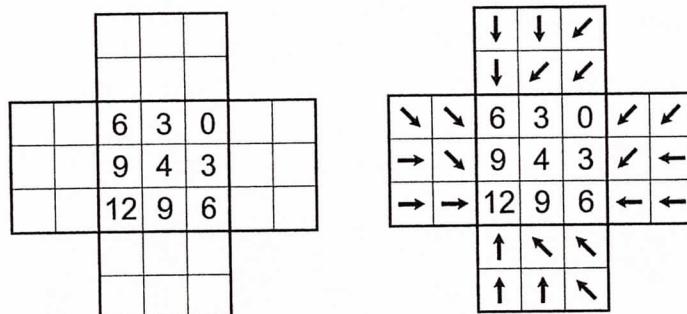
Divide the given shape into six different pentominoes. The numbers define the number of barriers in the corresponding direction.

Example with three different quadrominoes:



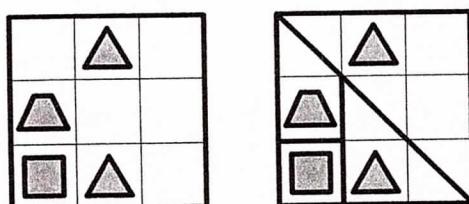
Double Arrows (48 Points)

Draw arrows in the squares around the large square. Each square has one arrow and each arrow points at least to one number. The numbers show how many arrows point to them.



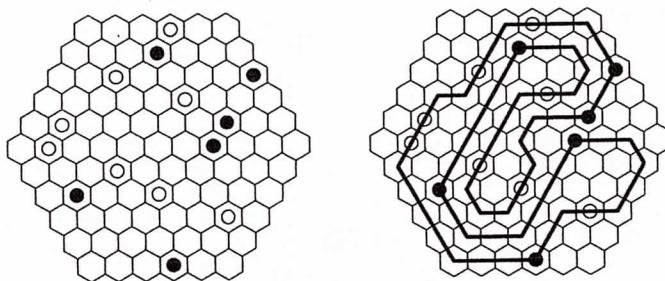
Geometric Shapes (23 Points)

Divide the whole grid into smaller geometric shapes by drawing straight lines either following the full grid lines or the full diagonals of the square cells. Each formed shape must have exactly one symbol inside, which represents it. The rectangle symbol cannot be contained in a square. The trapezoid has two parallel sides, but its other two sides are not parallel.



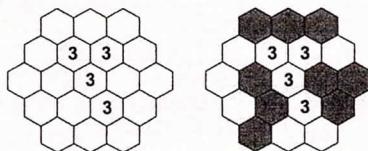
Hexa Masyu (44 Points)

Find a single closed loop passing through each of the black and white circles. The path connects the centers of adjacent cells, and can only make turns of 120°. When passing through a black circle, the path must turn and extend at least two cells in both directions. When passing through a white circle, the path must go straight and must make a turn in at least one of the adjacent cells.



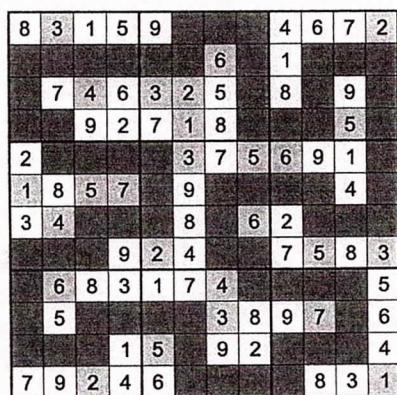
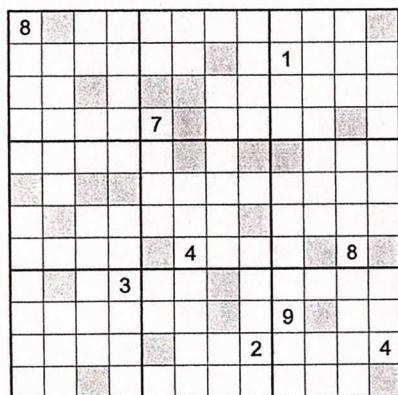
Honeycomb Islands (11 Points)

Draw in nine different pentaminos (islands) in the diagram. The islands are surrounded by the water, they don't touch each other, and water area is interconnected. Every water cell that touches three other water cells is marked with number three. None of the water cells is connected with more than three other water cells. The given shape  doesn't appear anywhere in the water area.



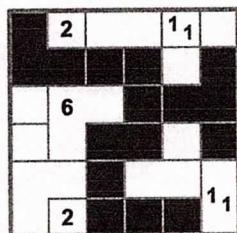
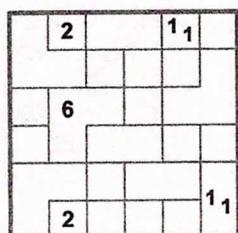
Hula-hoop (39 Points)

Draw the snake-like loop (one cell wide, not touching itself even at a point) in the grid. The loop cannot go through the numbered and grey cells. Fill all the cells not used by the loop with numbers 1 through 9 so that they're not repeated in rows, columns and outlined areas. Numbers in grey cells should be equal to the number of the neighbouring cells (adjacent or touching at a point) used by the loop.



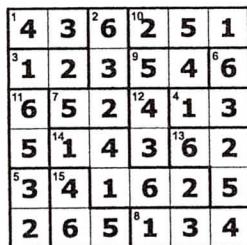
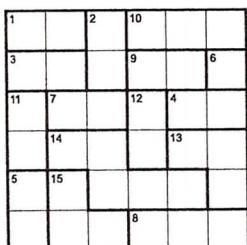
Irregular Tapa (21 Points)

Paint some cells black to create a continuous wall. Number/s in a cell indicate the length of black cell blocks on its neighbouring cells. 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 a 2x2 square or larger. There are no wall segments on cells containing numbers. The grid is divided into irregular shapes, each counting as one cell for the clues, independent from its size.



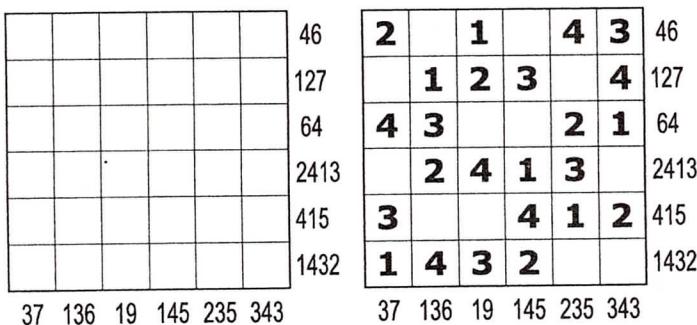
KenKen (30 Points)

Fill in the grid with digits 1-6. Digits cannot repeat in rows and columns. Applying one of the 4 arithmetic operations successively to all digits in the outlined areas must yield the indicated value. Subtraction and division are only applicable to two-digit areas.



Magic Summer (7 Points)

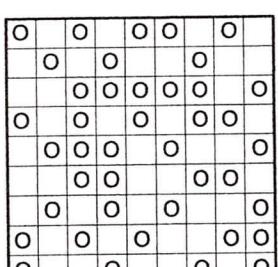
Place in the grid digits from 1 to 4, so that each row and column contains each digit exactly once. Numbers outside the grid show the total of all numbers appearing in corresponding rows and columns. These numbers are separated by at least one empty cell.



OoSphere (14 Points)

Place all the given words into the grid crisscross style (words appear either across or down and all words formed in the grid appear in the word list), so that all words are interconnected. All appearances of the letter “O” are given and each “O” in the grid is either a blackened cell or part of a word. Only the cells with the letter “O” can be blackened.

AP	AU	ADO	GOLF
CO	AGO	OBOE	
EP	APO	PROD	
NO	EGO	SOLO	
OF	EOS		
OK	GOO	TABOO	
ON	LEO		
OP	NEO	LOOKER	
OR	NOR	OOLONG	
OS	OAS	ORMOLU	
PR	OEO	ROCOCO	
SO	OPA		
TO			



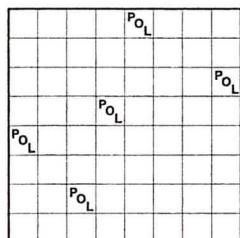
POLywords (35 Points)

Enter all of the given 19 words into the grid crisscross style (words appear either across or down and all words formed in the grid must appear in the word list) so that all words are interconnected. Enter one letter per square, except that all occurrences of "POL" have already been placed in the grid.

POLAND
POLISH
POLTROON
POLYURIC

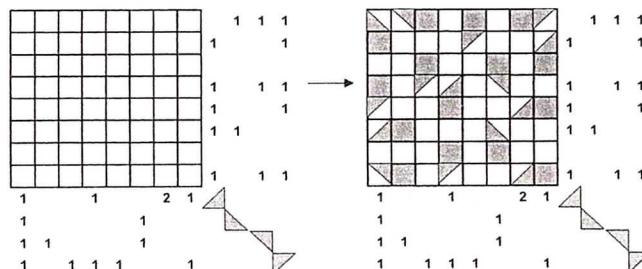
OUTPOLLED
TROPOLOGIC

GOSSYPOL



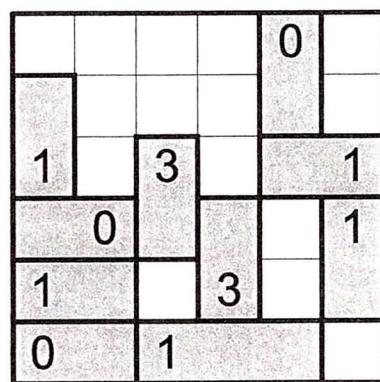
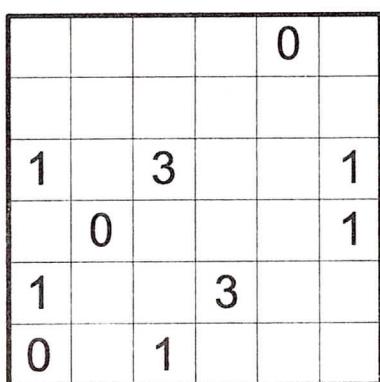
Trapeziums (17 Points)

Place some trapeziums into the grid. Each trapezium consists of one cell and a half. Trapeziums cannot touch each other even by a corner. Numbers outside the grid show the number of triangles of given form in a corresponding row or column.



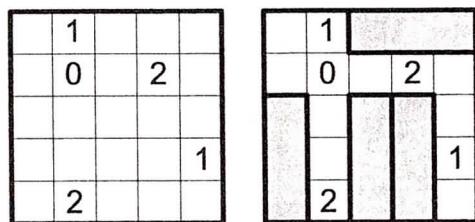
Tren (20 Points)

Locate some blocks in the grid, having the size either 1x2 or 1x3. Each number in the grid should be part of a block, indicating the length of possible movements of the block. Blocks can only move in the direction of their short edge. Blocks cannot overlap each other. All blocks should contain exactly one number and all numbers are given.

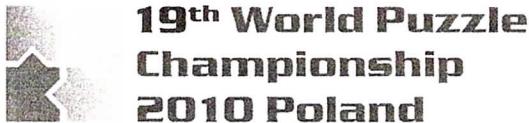


Wittgenstein Briquet (12 Points)

Locate some 1x3 blocks in the grid without overlapping each other or the numbers. Each number in the grid indicates the number of blocks touching that cell from the sides. All remaining cells should be connected to each other orthogonally.



NAME: TEAM:



Round 10 - individual 25 minutes

SPHERICAL OPERATIONS - 100 points

Find on the sphere (comprising 32 pieces) and write down on the answer sheet as many different correct mathematical equations as possible. The equations could be read in any direction, but must go only through adjacent pieces of the sphere and cannot jump through empty pieces. Within one equations, the same piece cannot be used more than once, but you can use the same digits. Within equations you have to follow mathematical priorities (at first multiplication (*) and division (/), next addition (+) and subtraction (-)). We will not accept equations containing multiplication by 0 nor division of the digit 0 by another numbers.

The number of points will depend on the number of found correct equations. The competitor who finds the most correct equations, will get 100 pts. Other competitor – proportionally less, according to the formula:

the amount of points = 100*(the number of correct equations of competitor X/the number of correct equations of the best competitor of this round)

Moreover, there will be bonuses for 5 longest correct equations (according to number of used pieces), respectively 60, 45, 30, 20, 10 points, but one competitor could get bonus points for only one equation.

A few competitors may get the same bonus if their longest equations will has the same length, and lower bonuses will be given to next competitors. So, more than 5 contestants could reach bonus points in this round.

The total score will be rounded to the closest integer number. A number with a fraction 0,5 will be rounded up.



SCORE

TEAM:



**19th World Puzzle
Championship
2010 Poland**

**Round 11- team
30 minutes**

OPERATION „KUŹNIA”

600 points

The task in this round is to fit places where photos „Kuźnia Napoleońska Hote”l and it surroundings were made with locations on hotels plan.

Write photos numbers in circels on plan. Some photos do not fit into any location on a map. Some locations do not fit into any photo.

It is allowed to leave competition hall during this round.

Scoring:

1st place - 600 points, each successive lower place 30 points less.
The ranking will be determined by the order completion of the round or the number of correct answers entered on the map. For every wrong fit: -19 pts.

POINTS

NAME: TEAM:



**19th World Puzzle
Championship
2010 Poland**

**Round 12 - individual
60 minutes**

POLIMINO 300 points

Time bonus - 4 points for every full minute before the end of round

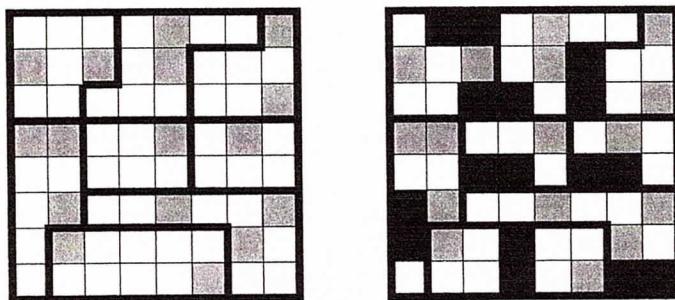
1. Black Domino	10 pts	<input type="text"/>
2. Dominesweeper	22 pts	<input type="text"/>
3. From Trimino to Hexamino	17 pts	<input type="text"/>
4. Make Square	33 pts	<input type="text"/>
5. Circles in Trimino	12 pts	<input type="text"/>
6. L-Loop	20 pts	<input type="text"/>
7. ZLOTI	25 pts	<input type="text"/>
8. Tetroscope	18 pts	<input type="text"/>
9. LITS	13 pts	<input type="text"/>
10. Pentaring	21 pts	<input type="text"/>
11. Four Segments	23 pts	<input type="text"/>
12. Pentamino Borders	43 pts	<input type="text"/>
13. Pentamino Relations	30 pts	<input type="text"/>
14. Circles on Circles	13 pts	<input type="text"/>

TIME BONUS

TOTAL

Black Domino (10 Points)

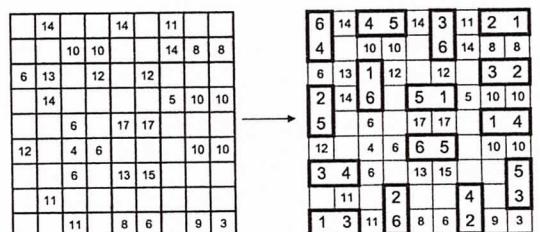
Place one black domino (2x1) in each of 8 outlined areas to get exactly 4 colored (gray and black) cells in each row and column. The dominoes cannot touch each other even by a corner.



Dominesweeper (22 Points)

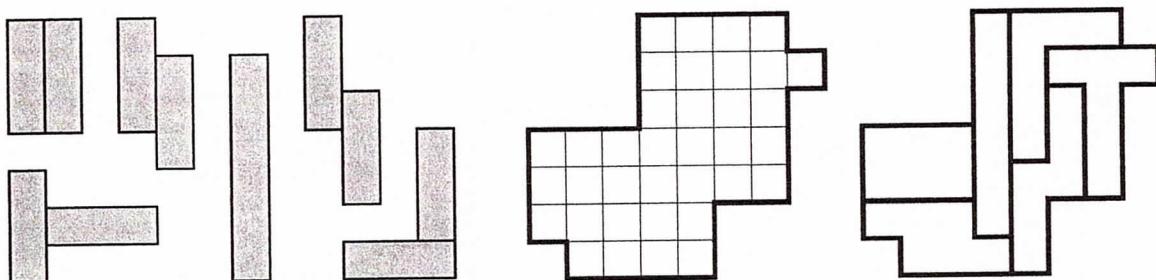
Locate given set of dominoes (with digits from 1 to 6 without doubles) in the grid. Dominoes cannot touch each other, not even diagonally. Digits on the domino halves cannot repeat in any row or column. The given numbers indicate the sum of numbers written into the neighbouring domino halves (diagonal neighbours included). No number may be covered by a domino.

1 2	2 3	3 4	4 5	5 6
1 3	2 4	3 5	4 6	
1 4	2 5	3 6		
1 5	2 6			
1 6				



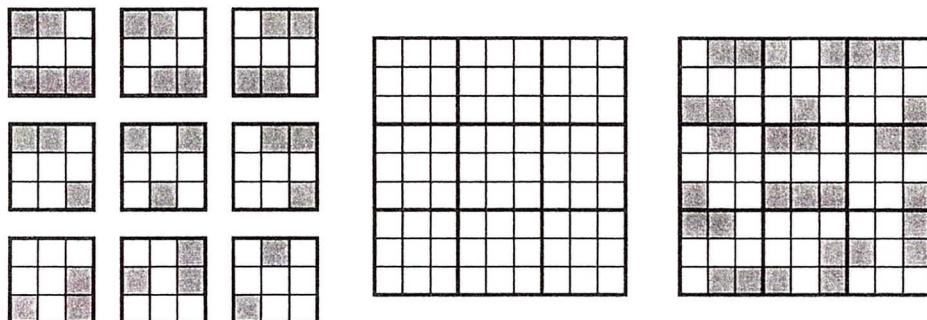
From Trimino to Hexamino (17 Points)

Divide the grid into the 12 triminoes 1x3 and then group them to get six different hexaminos. Use the same set of pieces as in example.



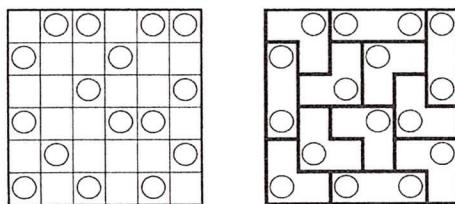
Make Square (33 Points)

Make a square 9x9 from nine 3x3 squares, which cannot be rotated or mirrored so that five corners triminoes and five line triminoes will be formed. The elements cannot touch each other even diagonally.



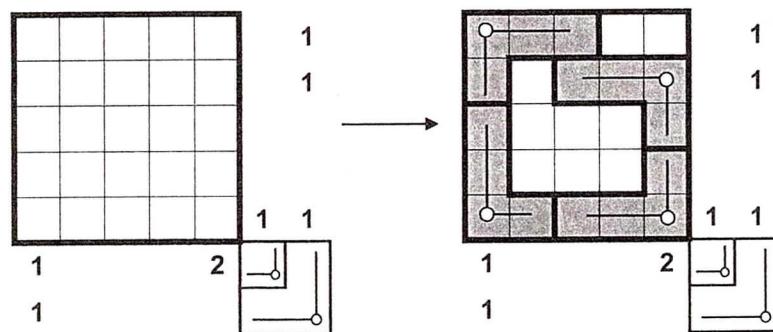
Circles in Trimino (12 Points)

Divide the grid into triminoes. Every corner trimino should contain one circle in the central cell and every line trimino should contain two circles on the sides.



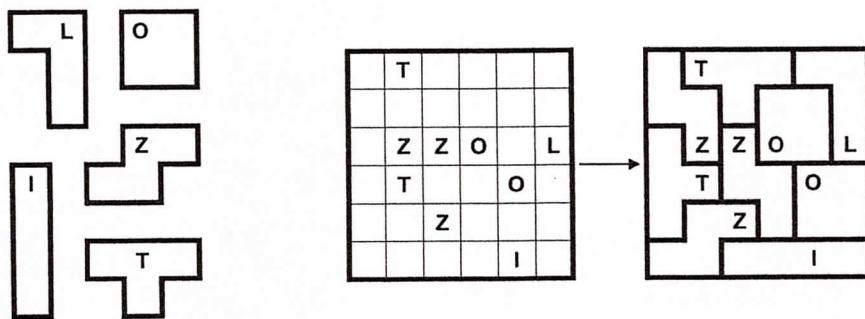
L-Loop (20 Points)

Several L-tetraminoes form a loop without touching. Find them. The digits indicate the number of full short and long segments of tetraminoes in rows or columns.



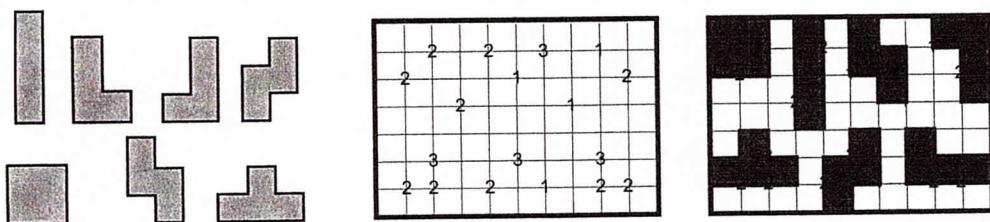
ZLOTI (25 Points)

Divide the grid into tetraminoes Z, L, O, T, I. Each tetramino should contain exactly one letter of its name. Tetraminoes can be rotated and/or mirrored but cannot overlap.



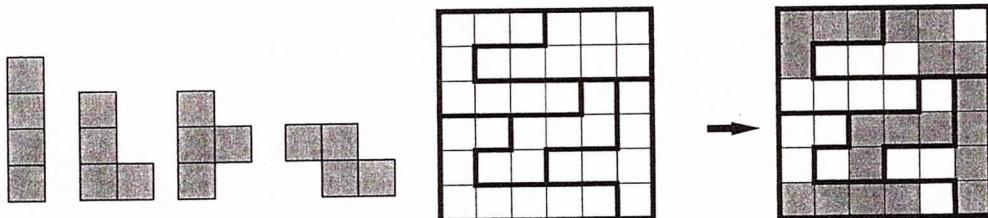
Tetroscope (18 Points)

Place the given set of tetrominoes (the same as in example) in the diagram using each tetromino exactly once. Pieces can be rotated but not mirrored. Numbers inside the grid indicate the amount of occupied cells in the neighbouring squares. Tetrominoes cannot touch each other, not even diagonally.



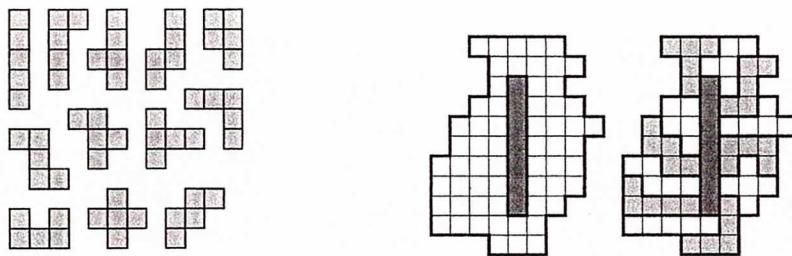
LITS (13 Points)

Blacken four cells in each outlined area so that each area will include one tetromino. Tetrominoes can be rotated and/or mirrored. Blackened cells should form a single interconnected area which does not have any 2x2 square fully painted black. The same tetrominoes cannot touch each other from the sides, but they can touch each other diagonally.



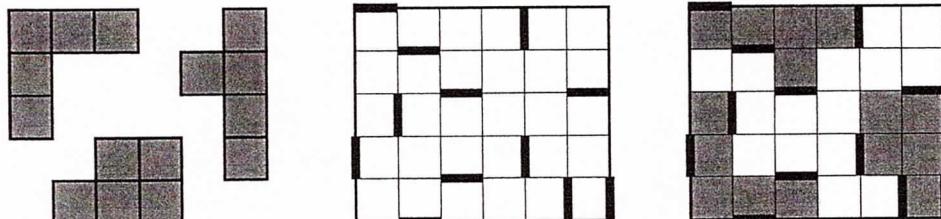
Pentaring (21 Points)

Divide the grid into 12 different pentaminoes, which can be rotated and mirrored. Each element should touch by side exactly two another elements.



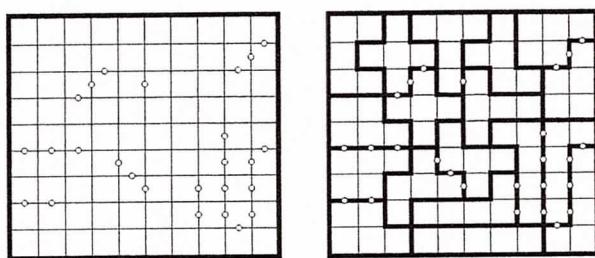
Four Segments (23 Points)

Place 12 different pentomino elements into the grid so that they don't touch each other even diagonally. Each element will have exactly four marked segments of border. Pentominoes can be rotated and/or mirrored.



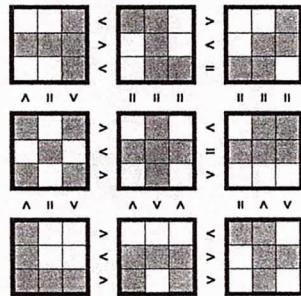
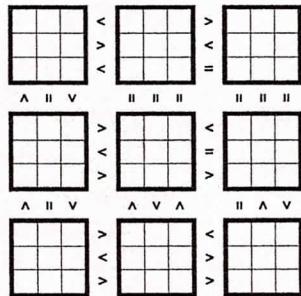
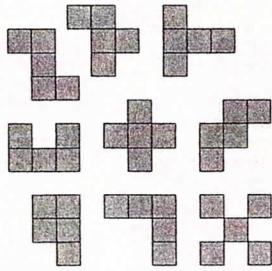
Pentamino Borders (43 Points)

Divide the grid into pentominoes. All segments of the border between the same elements, that may be rotated and/or mirrored, are marked by small circles.



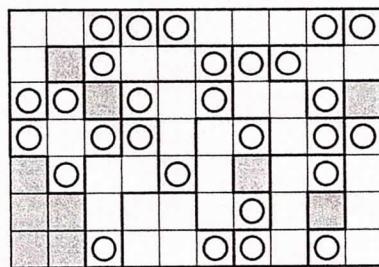
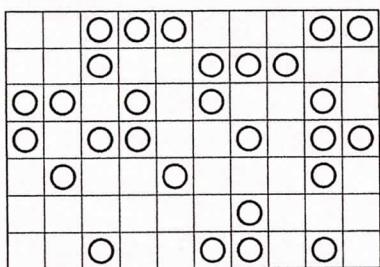
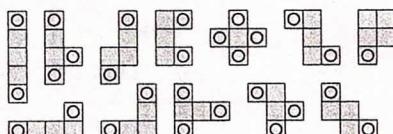
Pentamino Relations (30 Points)

Place given set of 9 elements (the same as in the example): 8 pentominoes and 1 cross, one element in each 3x3 square, so that each relation will be fulfilled. Relations compare numbers of squares filled with a part of element in given row or column. Elements can be rotated but not mirrored.



Circles on Circles (13 Points)

Place in the grid complete pentamino set without overlapping. Elements can be rotated and/or mirrored. All circles must be covered by the pentamino's end cells with circles. Some cells will be left empty.



NAME: TEAM:



**19th World Puzzle
Championship
2010 Poland**

**Round 13 - individual
45 minutes**

BROKEN PUZZLES 225 points

Time bonus - 4 points for every full minute before the end of the round

- | | |
|------------------------|--------|
| 1. Broken Thermometer | 32 pts |
| 2. Collapsed Building | 27 pts |
| 3. Desert Island | 20 pts |
| 4. Incorrect Operation | 19 pts |
| 5. Missing Arrow | 35 pts |
| 6. Sapper's Error | 16 pts |
| 7. Unlucky Angler | 18 pts |
| 8. Unusual Magnet | 43 pts |
| 9. Whitened Mastermind | 15 pts |

BONUS POINTS

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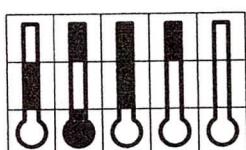
TOTAL

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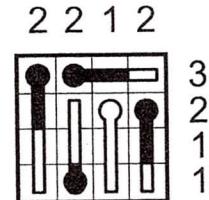
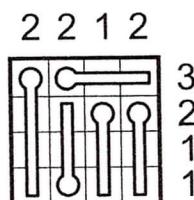
Broken Thermometer (32 Points)

Some parts of the thermometers are filled with mercury. Mark those parts by blackening them. The digits outside the grid indicate the amount of grid cells with mercury in parts of thermometers in respective rows/columns. Cells can contain no mercury or be fully filled with it (to the boundary of the cell or to the end of the thermometer). If the thermometer is not broken, it has to contain mercury in its reservoir and can contain it in consecutive parts (grid cells). The thermometer is broken if any of these three options applies: it has no mercury at all, its reservoir is empty, or there is an empty part (grid cell(s)) with no mercury between the cell filled with mercury. There is exactly one broken thermometer in the grid, all others are not broken.

All possibilities of broken thermometers with length 3:

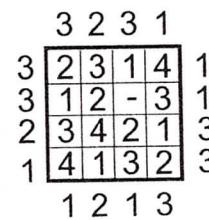
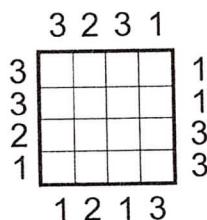


Example:



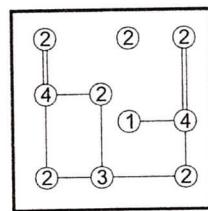
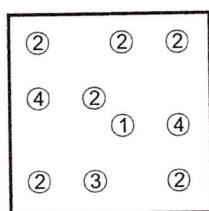
Collapsed Building (27 Points)

Place digits 1-6 (1-4 in the example), so that no digit is repeated in any row or column. Each digit inside the grid represents a building with the height of the digit itself. Unfortunately, one building has collapsed, leaving an empty space where it once stood. Numbers outside the grid indicate the number of buildings that can be seen by an observer looking into the grid in the corresponding direction, taking into account that higher buildings block the view of lower buildings from the observer.



Desert Island (20 Points)

Connect islands with bridges, so that exactly one island will remain without any bridges at all, and all other islands will be interconnected with the bridges. Digits on the islands represent the amount of bridges going from that island. The digit on the “desert island” means nothing. Each bridge has to connect two islands and go either horizontally or vertically. Two islands can be connected with up to two bridges. Bridges cannot cross or go over islands.



Incorrect Operation (19 Points)

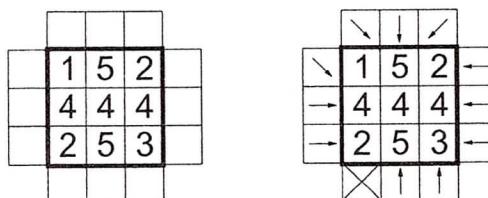
Puzzle 4

Place one digit from the set 1-9 (each digit once) in each square, so that there will be correct equations read from top to bottom or left to right. The sequence of these operations is as read, not as in mathematical priority. There is exactly one symbol of an operation, that was changed into another (from +,-,x,/), so the equation which has that one is incorrect. But after changing that symbol into another, all equations become correct. There is no need to change that symbol in solution – it's enough to write all nine digits in correct places.

$$\begin{array}{rcl} \boxed{} - \boxed{} + \boxed{} = 15 & \boxed{8} - \boxed{2} + \boxed{9} = 15 \\ + + + & + + + \\ \boxed{} \times \boxed{} - \boxed{} = 13 & \boxed{6} \times \boxed{3} - \boxed{5} = 13 \\ - + - & - + \times / \\ \boxed{} + \boxed{} / \boxed{} = 11 & \boxed{4} + \boxed{7} / \boxed{1} = 11 \\ = = = & = = = \\ 10 & 12 & 14 & 10 & 12 & 14 \end{array}$$

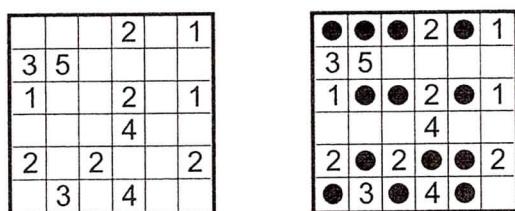
Missing Arrow (35 Points)

Put exactly one arrow in each (except for one) empty cell surrounding the grid, so that each number in the grid will show the amount of arrows with direction on it. Remember – one cell has to be empty. All arrows direct at least one cell with a number, either horizontally, vertically or diagonally (45 degree angle).



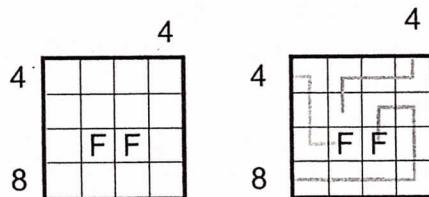
Sapper's Error (16 Points)

Place some mines in the grid, up to one in each cell. All digits, apart from exactly one, show the amount of mines in neighbouring cells via border or corner. There are no mines in the cells with digits.



Unlucky Angler (18 Points)

A few anglers, represented by the numbers, are sitting outside the lake, trying to catch a fish. From each number there is line to draw going through as many grid cells, as the number values. Exactly one line ends in the grid cell without a fish (F). Remaining ones connect the number outside the grid with a cell with a fish (F). Any two lines cannot cross nor overlap. The lines have to occupy all of the grid cells.



Unusual Magnet (43 Points)

Fill the grid with magnet plates and isolation plates. The positions of all the plates are shown by the bolder borders. Blacken the cells with isolaton plates and write „+” and „-” in cells with magnet plates. Each magnetic plate half is inscribed with either “+” - positive pole, or “-” - negative pole. In the grid there is exactly one magnet, whose positive pole has to touch only with other positive poles, and negative one – with only negatives. For all other pairs of magnetic plates (that don't contain "unusual magnet"), poles of same type cannot touch each other (horizontally or vertically). Digits outside the grid shows the amount of “+” and “-” marks in the corresponding row or column.

+	1	3	1	2
-	2	0	3	2
2	2			
2	2			
1	1			
2	2			

+	1	3	1	2
-	2	0	3	2
2	2	+	+	-
2	2	-	+	-
1	1			+
2	2	-	+	-

Whitened Mastermind (15 Points)

Decode a 5-digit code, built from 5 different digits from the 1-9 set (1-6 in the example). The amount of black dots next to the 5-digit code shows the amount of digits on the correct positions in the code. The amount of white dots shows the number of digits found on the other positions in the code than in the code. However in exactly one row all white dots should be treated like the black ones.

1	2	3	4	○ ○ ○
5	3	4	1	● ● ○
2	6	1	5	○ ○
3	5	6	2	○ ○ ○

whitened row

solution: 2 3 4 5

TEAM:



**19th World Puzzle
Championship
2010 Poland**

**Round 14 - team
40 minutes**

SLITHER LINK = WEAKEST LINK

Time bonus - 15 points for every full minute before the end of the round

Each team fix among themselves, which team member will solve which task. The choice is between types: Classic Slitherlink, Slitherlink Odd/Even, Slitherlink +/-1, Polygraph, and each team member will be solving 1 task in individual part of this round.

Each team member, who ends the task, goes to the team desk where he/she receives 2 pieces of the team task , one of Classic Slitherlink, and one of Slitherlink Odd/Even. The order of the 2-piece sets is the same for all teams. At the team desk, the team's goal will be to arrange and solve two Slitherlink diagrams of the size 20x20, each consisting of 4 pieces of jigsaw (an unknown ratio between Classic and Odd/Even Slitherlink).

The solution of each diagram must be redraw into answer sheet. The rules of pieces of jigsaw with Classic Slitherlink and Slitherlink Odd/Even are the same as the rules of the individual part of this round. On half-cells, the rules of two adjacent pieces are in force.

Points:

Classic Slitherlink – 15 pkt

Polygraph – 45 pkt

Slitherlink +/-1 – 65 pkt

Slitherlink Odd/Even – 75 pkt

Team part:

1 correctly solved piece – 50 pkt

1 correctly solved diagram – 300 pkt (including points for 4 correctly solved pieces)

The piece is judged as solved correctly if around all cells (including half-cells) of the piece, the loop is the same as the solution. The solution of the piece must also be redrawn into the answer sheet. The team could get time bonus only if all individual and team diagrams will be solved correctly.

800 points

SCORING

Classic Slitherlink

Polygraph

Slitherlink +/-1

Slitherlink Odd/Even

Solved pieces

Solved diagrams

TOTAL

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GRALITER

whypuzzles

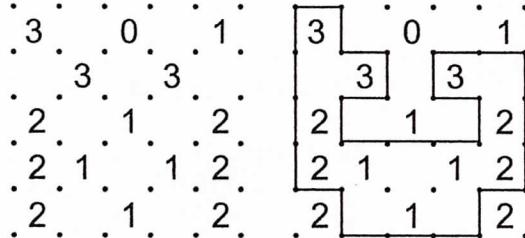
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SLITHER LINK = WEAKEST LINK

INDIVIDUAL TASKS

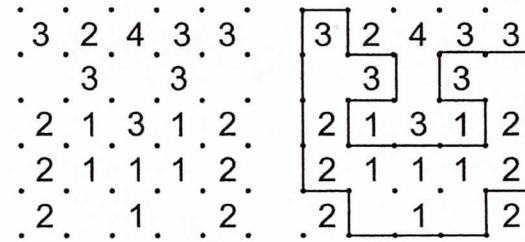
Classic Slitherlink.

Draw a single continuous loop by connecting neighbouring dots horizontally or vertically. The loop cannot cross and touch itself. The numbers inside the grid indicate how many edges of a cell are used for the loop



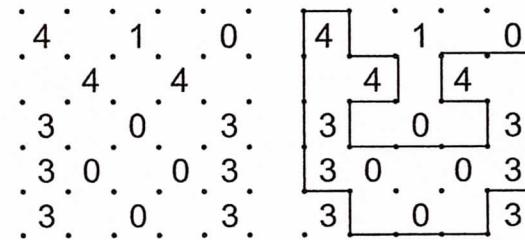
Polygraph

Draw a single continuous loop by connecting neighbouring dots horizontally or vertically. The loop cannot cross and touch itself. The numbers inside the loop indicate how many edges of a cell are used for the loop. The numbers outside the loop indicate how many edges of a cell are NOT used for the loop.



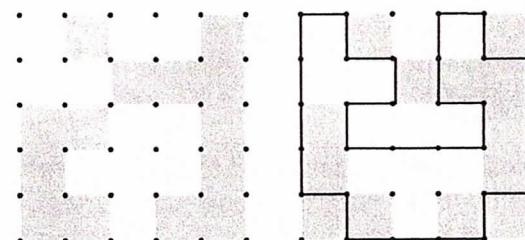
Slitherlink +/-1.

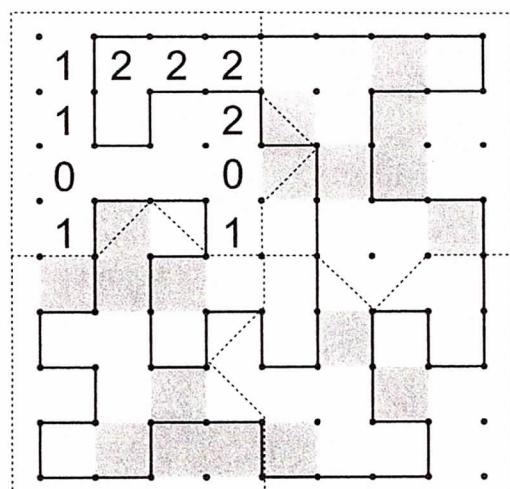
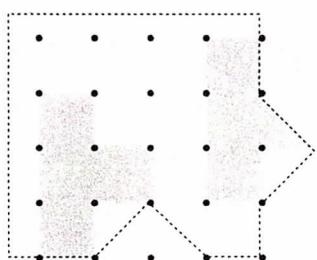
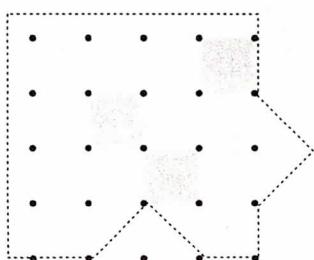
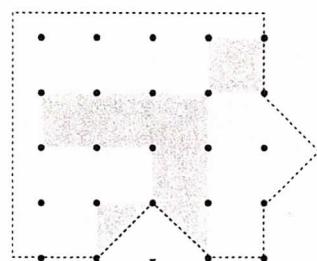
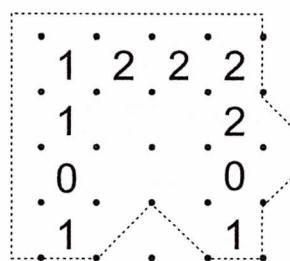
Draw a single continuous loop by connecting neighbouring dots horizontally or vertically. The loop cannot cross and touch itself. The numbers inside the grid are either one more or one less than the amount of edges of a cell used for the loop.



Slitherlink Odd/Even.

Draw a single continuous loop by connecting neighbouring dots horizontally or vertically. The loop cannot cross and touch itself. The numbers inside the grid indicate how many edges of a cell are used for the loop. Grey cells contain even numbers, white cells contain odd numbers. The loop cannot touch or cross itself. There are no cells with number 0 in the grid.



SLITHER LINK = WEAKEST LINK**TEAM TASKS**

NAME: TEAM:



**19th World Puzzle
Championship
2010 Poland**

**Round 15 - individual
15 minutes**

SCREEN TEST 114 points

This part consists of 19 puzzles projected on a screen. Competitors will have a limited period of time (as displayed on the screen) to examine each puzzle. They will be answer using electronic voting system.

Scoring:

Good answer: + 6 points
Wrong answer: - 1 points
Lack of answer: 0 points

SCREEN TEST

1. Which border has the biggest number of vertices?

19

- (A) outer border of 1 (B) outer border of 9
(C) inner border of 1 (D) inner border of 9

2. Arithmetic signs +, -, *, / can be placed between the given numbers. They can be repeated. Operations are done in the order. Which result can be achieved in exactly two different ways?

3 ○ 2 ○ 1

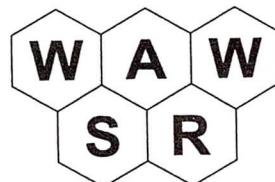
- (A) 2 (B) 3 (C) 5 (D) 7

3. Which result number cannot be a total of any three of given numbers?

17 26 33 42 49 51

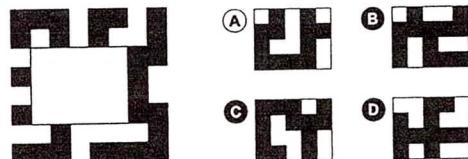
- (A) 96 (B) 99 (C) 101 (D) 108

4. How many ways to read WARSAW going through adjacent letters?



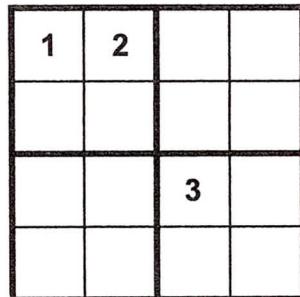
- (A) 2 (B) 3 (C) 4 (D) 6

5. Which fragment should be inserted without any rotation to get the solid figure without the holes?



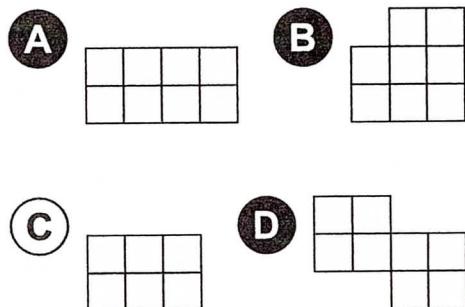
SCREEN TEST

6. How many solutions does this Sudoku puzzle have?

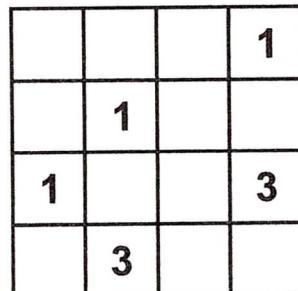


- A 2 B 3 C 4 D 6

7. Which figure can be divided into dominoes in exactly 19 (3 in the example) ways?

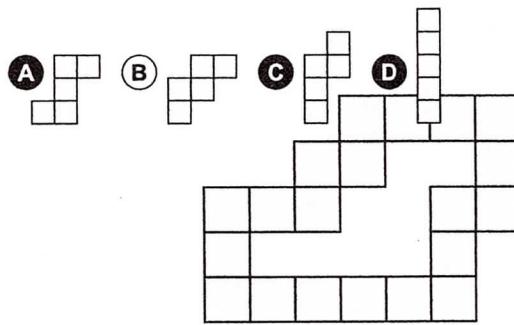


8. How many mines does the solution of this Minesweeper puzzle contain?

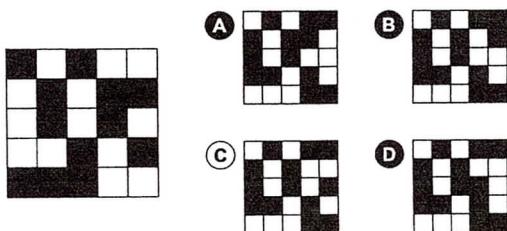


- A 3 B 4 C 5 D 6

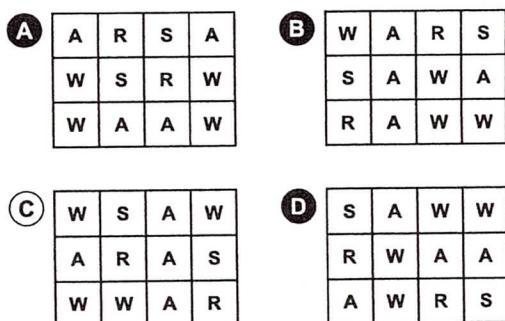
SCREEN TEST



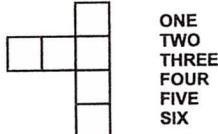
9. L-pentamino and three more different pentaminoes are combined into this loop. Which pentamino is not used? Pentominoes may be rotated and/or mirrored.



10. Which figure is the negative of the given one?



11. Which grid cannot be broken into two words NINETEEN (WARSAW in the example)?

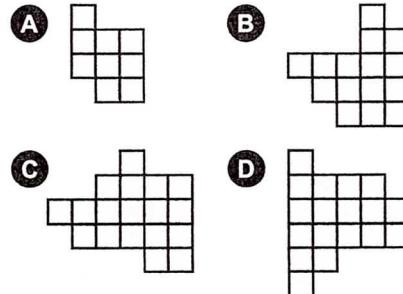


12. Three (two in the example) words from the given list can fit into this crossword. Which one represents the smallest number of those three (two)?

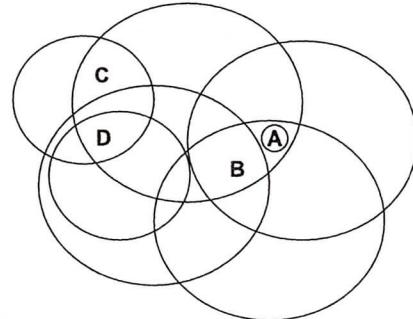
- A** ONE **B** TWO **C** FOUR **D** FIVE

SCREEN TEST

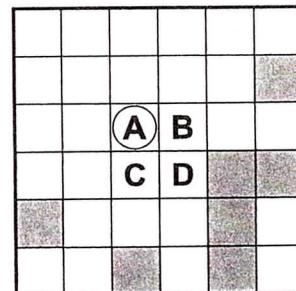
13. Which figure cannot be divided into 1x3 rectangles?



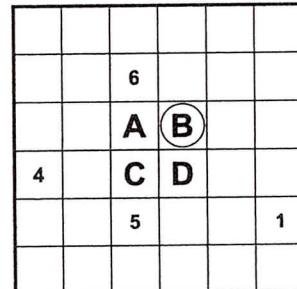
14. Which letter is placed in exactly 3 circles?



15. The chess knight placed on which lettered cell can attack the smallest number of the grey cells?

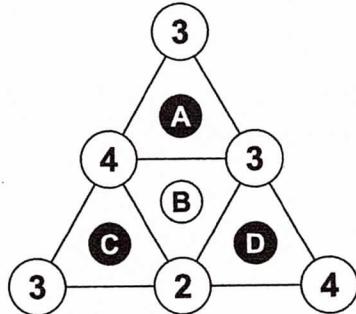


16. Solve the Akkara Loop puzzle (ignoring the letters). In which lettered cell the loop makes a turn?

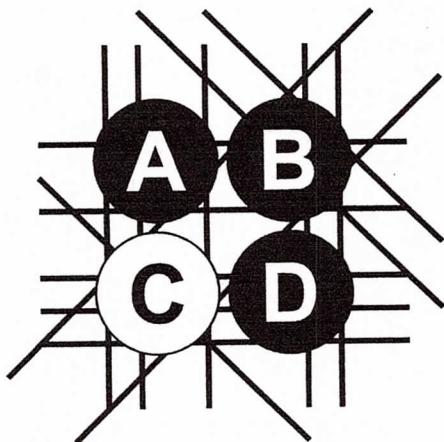


SCREEN TEST

17. Which triangle should be turned (together with the numbers in its corners) so that the totals of the numbers on all six straight lines became different?



18. Which lettered circle covers exactly 19 (9 in the example) lines?



19. Which image is not the valid reflection of three others?

