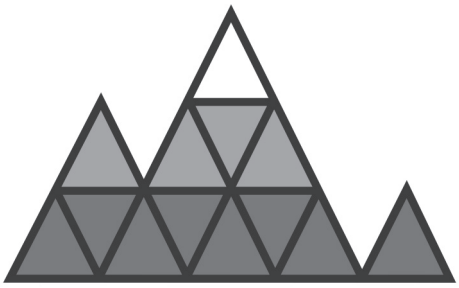


15th World Puzzle Championship
BOROVETS, BULGARIA 2006

INSTRUCTION BOOKLET

SCHEDULE

Saturday, October 7

- all day — Arrival
- 19:00 — Welcome party

Sunday, October 8

- 08:00-09:00 — Breakfast
- 09:00-17:00 — Excursion (with photo session)
- 19:00-20:30 — Dinner
- 21:00-22:00 — Questioning time

Monday, October 9

- 08:00-09:30 — Breakfast
- 09:30-09:45 — Opening ceremony
- 09:45-12:30 — Puzzle competition parts 1-3
- 12:30-14:00 — Lunch
- 14:00-18:00 — Puzzle competition parts 4-6
- 19:00-20:30 — Dinner

Tuesday, October 10

- 08:00-09:30 — Breakfast
- 09:30-12:30 — Puzzle competition parts 7-9
- 12:30-14:00 — Lunch
- 14:00-17:20 — Puzzle competition parts 10-12
- 19:00-20:30 — Dinner

Wednesday, October 11

- 08:00-09:30 — Breakfast
- 09:30-12:30 — Puzzle competitions parts 13,14, finals
- 12:30-14:00 — Lunch
- 14:00-19:00 — Free time
- 19:00-24:00 — Farewell party

Thursday, October 12

- all day — Departure

JUDGING

• All puzzles must be solved completely; puzzles with incomplete or unclear answers will be rejected.

• No negative points will be scored, only positive.

• Competitors are only allowed to use pens, pencils and erasers. We will supply to each competitor: pen, black and color pencils, eraser, sharpener, blocknote.

• Samples included in this booklet are only to visualize the instruction. They may not match numbers in instruction.

• During the competition you will get your own puzzles back. If you have questions about judging or scoring, your team captain should ask them to us.

BONUS ROUNDS

• Two types of bonuses will be given in each bonus round. First 5, 10 or 15 players in individual rounds and first 5 or 7 teams in team rounds will receive bonus points according to their position. In addition, each players who finishes before the round time will receive bonus points for the time saved.

• Bonuses are given only for completely solved all puzzles

• When you are ready with all puzzles, you shout and a proctor will come to you to timestamp your booklet. Booklets are checked in timestamps order.

• If not all bonuses for fastest puzzlers/teams were given during the time, then time is extended unlimitly until all bonuses are given. Time bonuses are always against the initially defined time, even the round was extended.

FINALS

• First 10 puzzlers after round 14 will take part in semi-finals.

• Each finalist will start the semi-final at different time according to the points he or she scored during rounds 1-5, 7-11 and 13. The actual quotient will be decided before the semi-finals such that the best finalist will have 30 minutes.

• Next to each finalist there will be a proctor. When finalist is ready with a puzzle he or she may give it to the proctor for checking and goes on with another puzzle. If proctor finds an error, he or she will show the instruction obeyed and penalty puzzler with 90 seconds. During penalty time puzzler may not solve or check any puzzle.

• First three puzzlers who solve semi-final puzzles go to the final. If there are no three puzzlers ready during the time, then time is extended inlimitly until three puzzlers are ready.

• The final will follow the same rules as semi-final with exception that puzzles will be printed on large sheets and the public will be able to see the solution process.

15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 1
individual

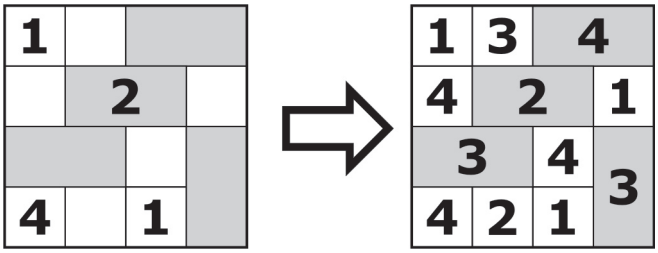
Welcome

9th October 2006
09:45 - 10:25 (40 minutes)
Maximum score: 200 points

Puzzle 1 (25 points)

Different neighbours

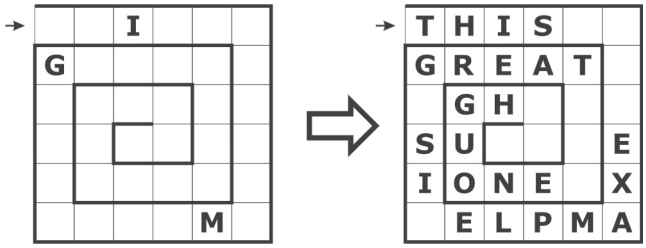
Fill the grid with numbers from 1 to 4, so that cells with the same numbers do not touch each other, not even diagonally.



Puzzle 2 (30+25 points)

Word snail

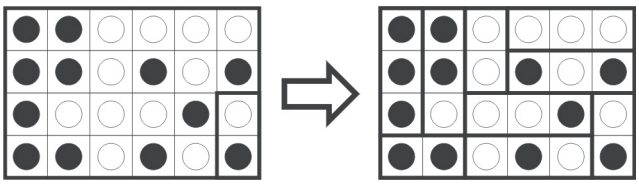
Write all the given words without holes into each grid, following the spiral (all words are used in each grid), not necessarily in the given order. Words must be separated by at least one empty cell. Letters cannot appear more than once in any row or column.



Puzzle 3 (35 points)

Manifold dividing

Divide the grid into some strips, 1-cell wide with length 2, 3 or 4 cells (2 or 3 in the example). No two strips can be the same, even if rotated. Some strips are already shown.



Puzzle 4 (10 points)

Series

Find the last number in the sequence.

Puzzle 5 (5 points)

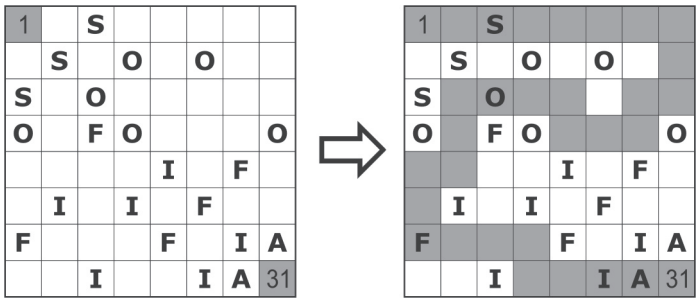
Bulgarian towns

Find and highlight the given Bulgarian towns. Words can be found in all directions – horizontally, vertically and diagonally, either forward or backward.

Puzzle 6 (20 points)

WELCOME SNAKE

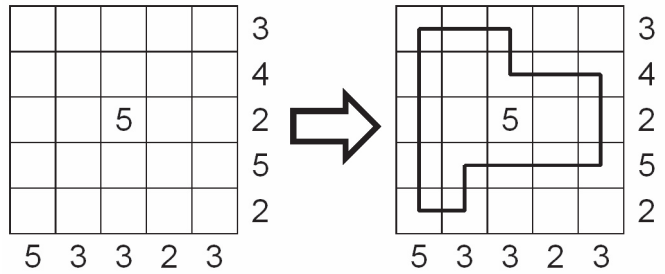
Draw in the grid a snake, 45 cells long, not touching itself even diagonally. The head and the tail are shown. Going along the snake the word "BOROVETS" must be read exactly once with letters in correct order.



Puzzle 7 (10 points)

WELCOME LOOP

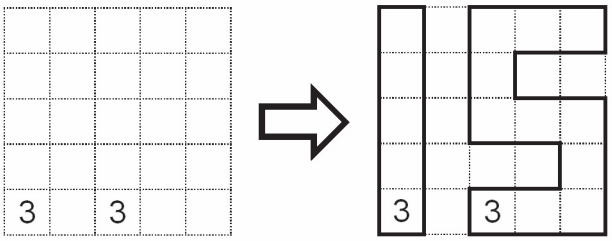
Draw a single continuous loop consisting of straight sections. The loop may not pass through a cell more then once. The numbers outside the grid indicate how many cells of that row or column are occupied by the loop. Numbers in the grid show how many of surrounding cells are occupied by the loop (there are no loop segments in numbered cells).



Puzzle 8 (10 points)

1 & 5

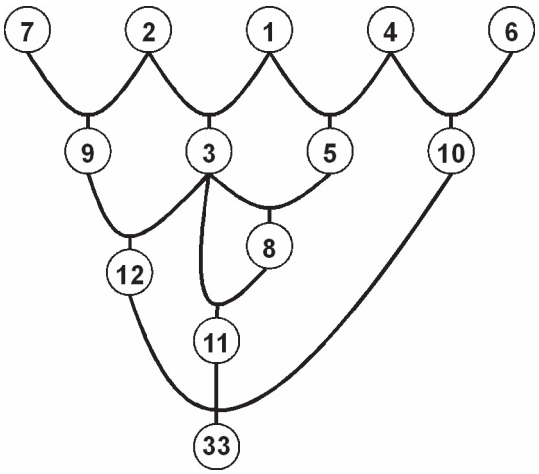
Outline two 1s and two 5s in the grid. They may be rotated but not mirrored, and may not touch each other, not even diagonally. Numbers show how many of the cell borders are parts of lines.



Puzzle 9 (30 points)

SUMS TREE

Fill in numbers from 1 to 15 into circles. If a number is connected with some numbers above it, then it's equal to their sum.



15th World Puzzle Championship
BOROVETS, BULGARIA 2006

PART 2
individual

ASSORTED

9th October 2006
10:35 - 12:05 (90 minutes)
Maximum score: 500 points

Puzzle 1 (10 points)

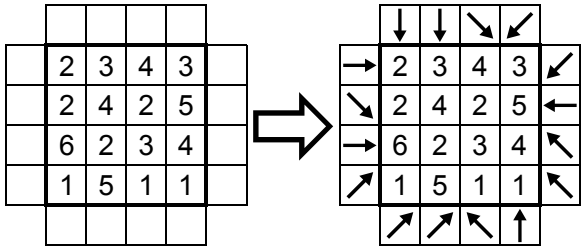
DIVER

Find the 10 differences between the two pictures. All 10 differences must be marked on at least one of the pictures.

Puzzle 2 (35 points)

ARROWS

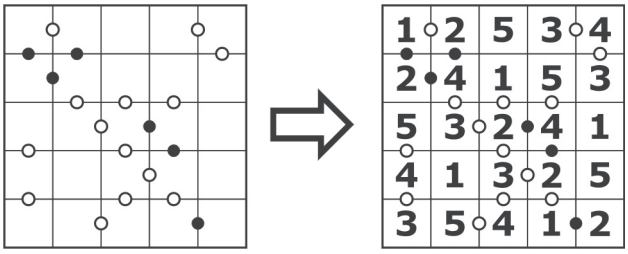
In each empty cell around the border, insert an arrow pointing at the grid horizontally, vertically or diagonally. Each number in the grid indicates the number of arrows pointing at it.



Puzzle 3 (20 + 30 + 25 points)

KROPKI

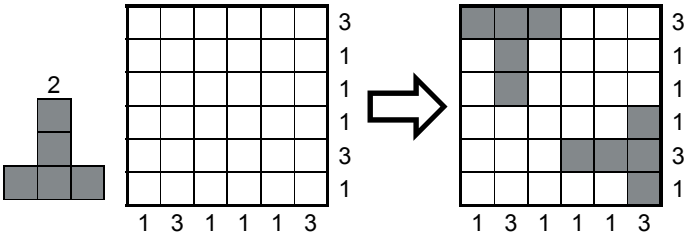
Fill the table with digits from 1 to 7 (in the second and the third puzzles from 1 to 8), so that each digit appears in every row and column exactly once. If absolute difference between two digits in neighboring cells equals 1 then they're separated by white dot. If digit in the cell is a half of digit staying in the neighbouring cell then they're separated by black dot. The dot staying between "1" and "2" can have any of these colours.



Puzzle 4 (35 points)

T-SHAPES

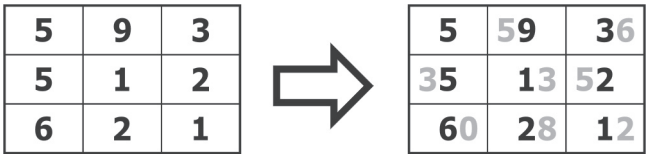
Place 7 T-shapes into the grid, so that they do not touch each other even diagonally. Shapes may be rotated. Numbers show how many cells are filled in the corresponding row or column.



Puzzle 5 (15 + 15 + 15 points)

HUNDRED

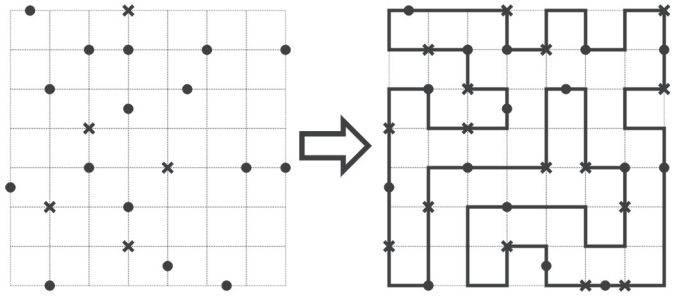
Fill in the grid so that the total of all numbers in every row and column equals to 100. Numbers in cells must contain the digits which are already shown.



Puzzle 6 (40 points)

Breaking the loop

Draw a single closed loop going through all the grid nodes. Then break this loop into 16 pieces. In each row and column of the nodes must be exactly two breaking points (some are shown in table as "X"s). Middle points of all 16 pieces are shown as dots.



Puzzle 7 (10 + 15 points)

Fill the matrix

Fill in empty cells in the grid with numbers from 1 to 25 (1 to 49 in second puzzle), so that the sums of the elements in all rows and columns are equal. No number may be used twice in the matrix.

Puzzle 8 (25 points)

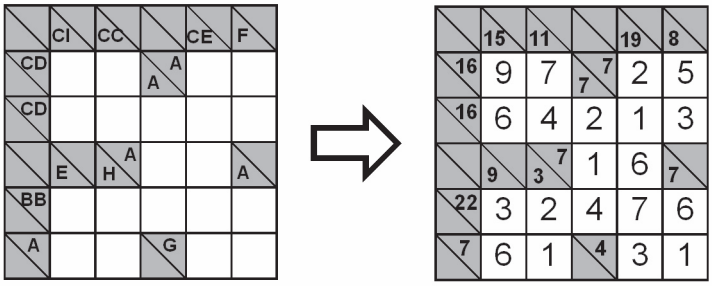
Ships

Find out which is the exact copy of the original.

Puzzle 9 (60 points)

Letter cross sums

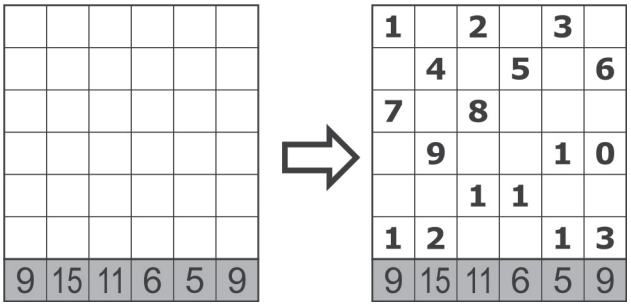
Replace each letter with a unique digit and then solve the formed Cross Sums puzzle: Enter a single digit from 1 to 9 into each empty square so that the sum of the digits in each across and down answer squals the value given to the left or above, respectively. No digit is repeated within the answer..



Puzzle 10 (40 + 50 points)

Vertical sums

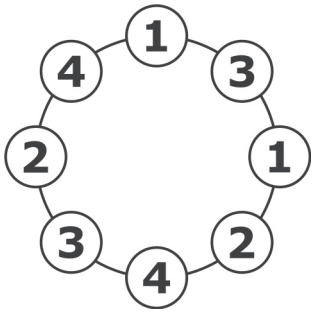
Write in the table numbers from 1 to 19, placing each next number to the right in the same row, or somewhere in the next row. Two-digit numbers must be written in two consecutive cells, that are in the same row. Numbers can touch each other, but only by corners. Numbers at bottom of the grid show the sums of digits in corresponding columns.



Puzzle 11 (60 points)

Wheels of fortune

Fill empty circles with the numbers, so that each big wheel contains digits from 1 to 8 exactly twice, each small wheel contains digits from 1 to 4 exactly twice, and between two circles with the same value along the wheel appears the same number of circles.



15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 3
individual

Screen test

9th October 2006
12:15 - 12:30 (15 minutes)
Maximum score: 100 points

In this round score is given only based on number of correctly solved puzzles.
You will get 5 points per puzzle for 14 or less solved puzzles,
80 points for 15, 90 for 16 and 100 for 17 solved puzzles.

Puzzle 1 (20 seconds)

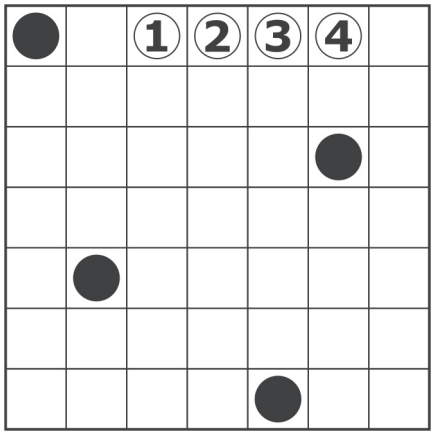
Clocks

Find out which two clocks show closest times. To make the puzzle more difficult, all clocks are mirrored.

Puzzle 2 (20 seconds)

Travelling chips

There are four chips with different values from 1 to 4. The white circles represent the chips' starting positions. In one turn each chip moves horizontally or vertically as many cells as is its value. The black circles represent the positions of the chips after two turns.
Find the values of the chips in their starting position. Write them from top to bottom.



1 2 3 4

Puzzle 3 (20 seconds)

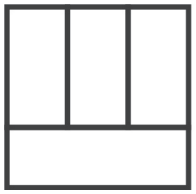
Broken picture

Find the three pieces that can form the whole picture.
The pieces can be rotated, but not mirrored.

Puzzle 4 (20 seconds)

How many rectangles?

Count all the rectangles, omitting the squares.

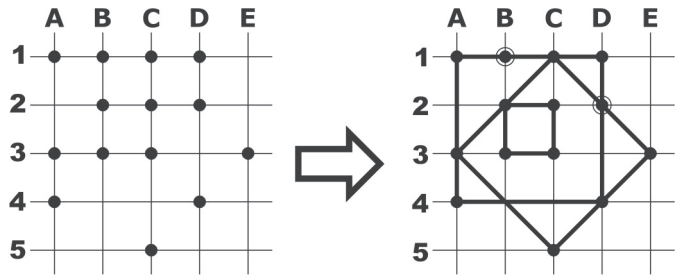


5

Puzzle 5 (45 seconds)

Square's vertices

Twelve of the fourteen dots provided are the vertices of three squares. Find the other two.

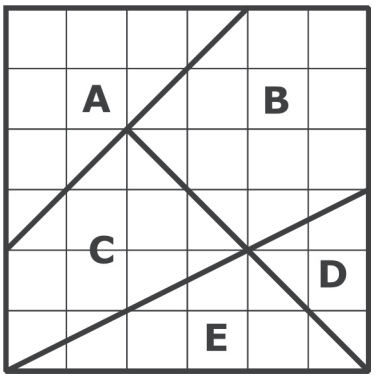


B1, D2

Puzzle 6 (40 seconds)

Areas

Two of the pieces here have equal area. Which ones?

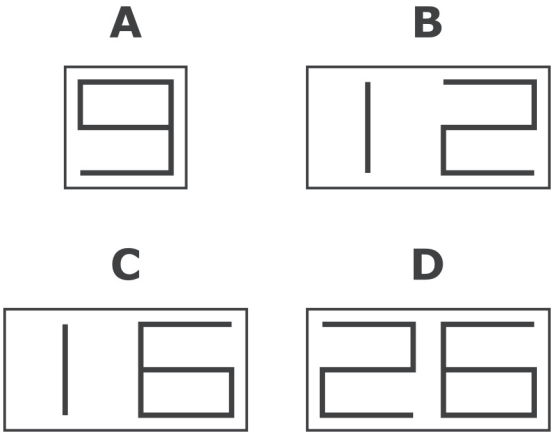


AC

Puzzle 7 (20 seconds)

Cards

Select some of the cards so that the numbers on them add up to 100. The cards may be rotated, but not mirrored.



A C

Puzzle 8 (20 seconds)

Same lines

Which two coloured lines have the same shape (the lines are not rotated or flipped)?

Puzzle 9 (25 seconds)

Same figures

Which two squares contain the same sets of figures?

Puzzle 10 (20 seconds)

Unfolded cube

Which cube is being unfolded?

Puzzle 11 (20 seconds)

Domino

Which domino tile should replace the question-mark tile?

Puzzle 12 (20 seconds)

Rotated figure

Which of the figures is the rotated variant of the original?

Puzzle 13 (30 seconds)

Missing square

Which square on the right should replace the question-mark square?

Puzzle 14 (30 seconds)

Math maze

Choose your way through the maze, so that in the end you will have the highest score (regular mathematical precedence applies). You cannot pass through the same segment twice. Write down the letters at the start and the end.

Puzzle 15 (20 seconds)

Missing tile

Which is the missing tile?

Puzzle 16 (40 seconds)

Same figures

Which two figures are the same?

Puzzle 17 (20 seconds)

Missing tile

Which is the missing tile?

15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 4
individual

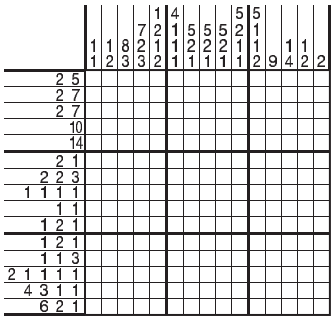
Paint-by-numbers

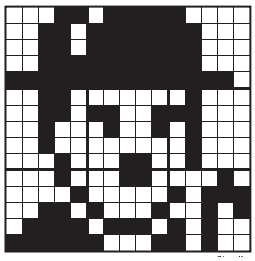
9th October 2006
14:00 - 15:00 (60 minutes)
Maximum score: 350 points

There are 6 black and 2 color puzzles in this part.
You will receive color pencils upon your arrival.

Puzzle 1 (30+50+60 points)

Pic-a-Pix



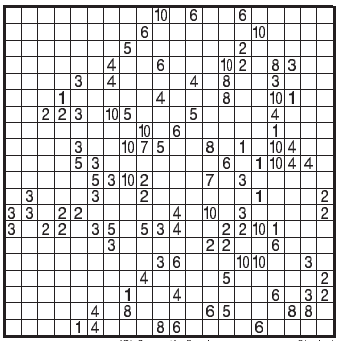


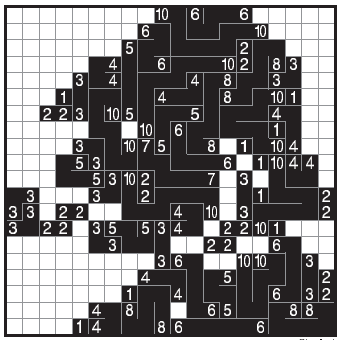
Black puzzles:
Blacken some of the cells to find out what the hidden picture is. The numbers in the beginning of the rows and columns indicate the number of cells in each black stretch in that row or column (the black regions are separated by one or more empty cells).

Color puzzle (no example):
Color some of the cells to find out what the hidden picture is. The numbers in the beginning of the rows and columns indicate the number of consecutive cells of same color (which is the number painted with). Regions with same colors must be separated by at least one white cell. Regions of different colors don't have to.

Puzzle 2 (40+60 points)

Link-a-Pix





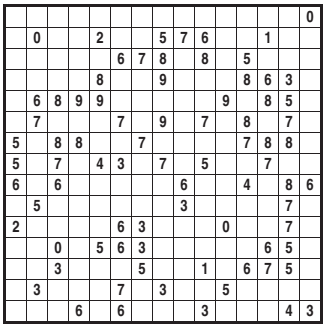
Black puzzle:
Link the pair of numbers. Each link must connect two numbers of same color and same value, and the length of the line (including start and end cells) must be equal to numbers it connects.

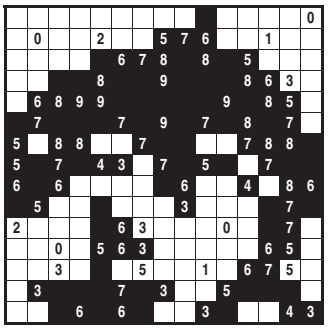
Color puzzle:
Link the pair of numbers. Each link must connect two numbers of same color and same value, and the length of the line (including start and end cells) must be equal to numbers it connects.

Puzzle 3 (30+50 points)

Fill-a-Pix

Blacken some cells, so that each number shows the number of black cells in 3x3 area surrounding it.

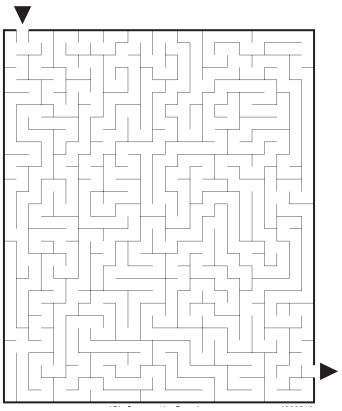


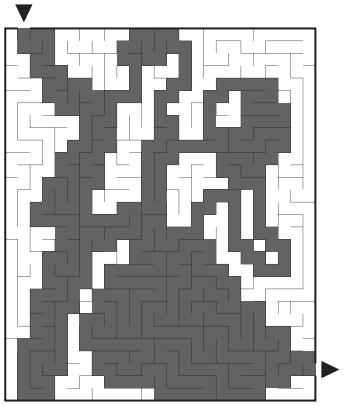


Puzzle 4 (30 points)

Maze-a-Pix

Go through the maze and blacken your way to get the picture.





15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 5
individual

Assorted

9th October 2006
15:10 - 16:40 (90 minutes)
Maximum score: 500 points

Puzzle 1 (15 points)

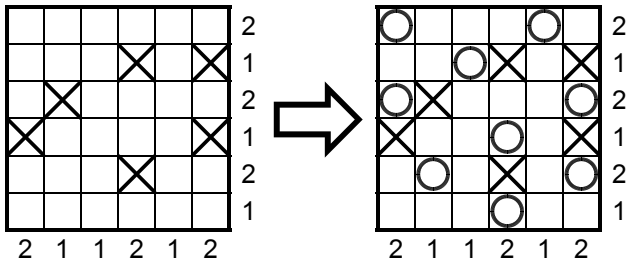
Star trek

Find the 10 differences between the two pictures. All 10 differences must be marked on at least one of the pictures.

Puzzle 2 (40 points)

Boats

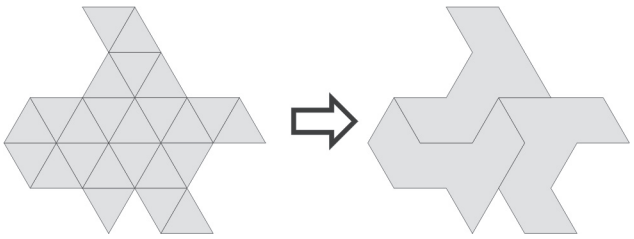
Place single-cell sized boats in the grid. They may not touch each other even diagonally. The number of boats in each row or column is shown.



Puzzle 3 (40 + 30 points)

Triangular cut

Divide the figure along the gridlines into the least number of identical pieces, which can be rotated and/or reflected.



Puzzle 4 (15 points)

What figures?

Which two figures from 1 to 6 should be in empty squares?

Puzzle 5 (10 + 25 points)

SpyFly

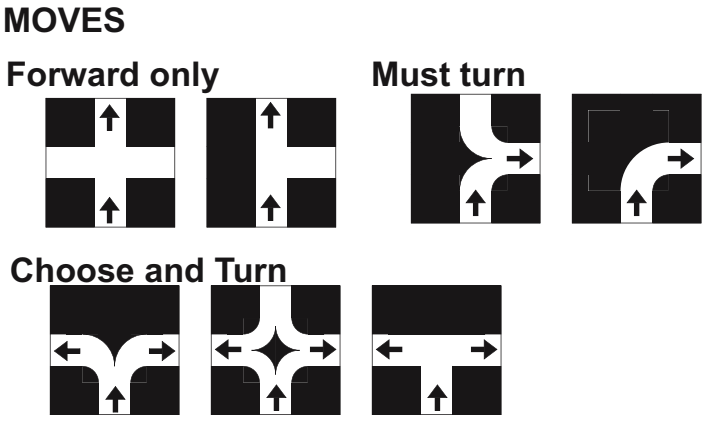
Fly from the Castle to the Safe House. Change airlines after each flight to confuse your pursuers.
What is the fewest airports you could pass through?
(in first puzzle #7 is your first; #4 is your last and in second puzzle #26 is your first, #13 is your last).

Puzzle 6 (10 + 10 + 10 points) METROMAZE

Go from Home to Airport visiting each marked Terminus station. Do not pass through any station more than once. Find your route with the minimum number of changing lines.
Note: For this puzzle changing lines mean that you have to get out of the train. Thus visiting terminus station is couted as changing line even you continue with the same line
Write down numbers of stations where you change lines in the order you visit them.

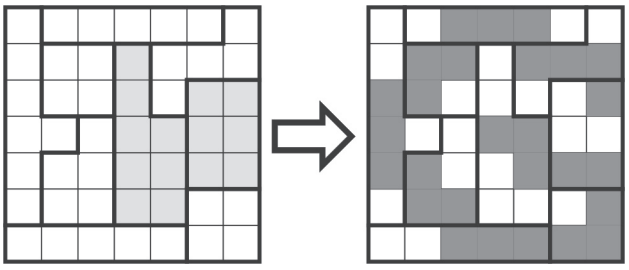
Puzzle 7 (25 + 25 points) CITIBLOX

Once started, keep going forwards. Always go straight ahead unless your way forward is blocked - then choose left or right.
Pass through each Checkpoint Circle once in any order. Reach the Finish passing the fewest Street Numbers (not the minimum total).



Puzzle 8 (40 + 40 points) SNAKE BY

Draw in the grid a snake that does not touch itself, not even diagonally. Each outlined region must contain exactly 3 cells occupied by the snake. The regions that contain the head and the tail of the snake are marked by grey color.



Puzzle 9 (15 + 80 points) NAVIGATI

Find the fewest number of jumps from Start to Finish.

Each circle contains a small number; this is the DISTANCE of your next jump. Simultaneously choose the DIRECTION of your next jump (vertical, horizontal, diagonal), from the choices offered. Each jump is in a Straight Line through one or more circles.

Record the sequence of your moves with numbers, starting with “0” at the Start. Your final number should be shown at the Finish.

Puzzle 10 (70 points) FIVE NUMBER SEQUENCE

Moving between adjacent cells (edge-to-edge neighbours), find a repeated fivenumber sequence from one of the bottom black cells to one of the top black cells. The five numbers in the sequence are different from each other, and the path of the sequence doesn’t touch itself, not even diagonally.
Finish on the fifth number of the sequence.

15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 6
team

Skyscrapers

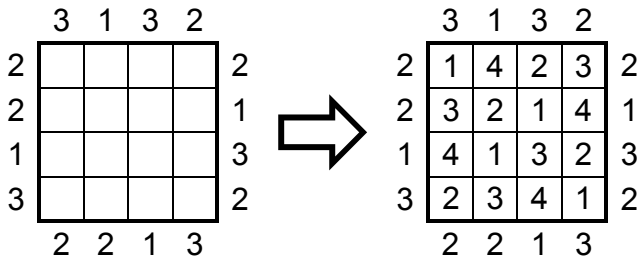
9th October 2006
17:00 - 17:40 (40 minutes)
Maximum score: 600 points

This is a team sprint round. Points are given according to the number of puzzles solved.
First 8 solved puzzles are awarded 15 points each, next 8 get 25 points each, and last 8 get 35 points each.

Puzzle 1

Count Skyscrapers

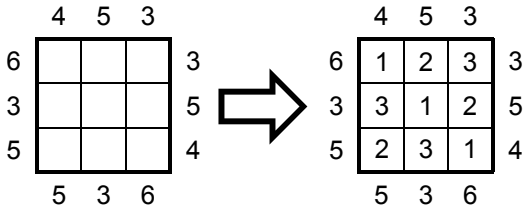
The grid symbolizes a neighborhood. Each row and column contains buildings of different heights. The numbers outside the grid indicate **how many buildings are visible** from that direction (the higher buildings hide the lower ones behind them).



Puzzle 2

Sum Skyscrapers

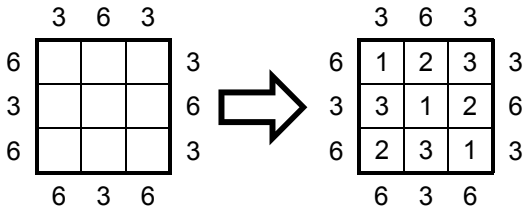
The grid symbolizes a neighborhood. Each row and column contains buildings of different heights. The numbers outside the grid indicate the **sum of heights of the buildings visible** from that direction (the higher buildings hide the lower ones behind them).



Puzzle 3

Product Skyscrapers

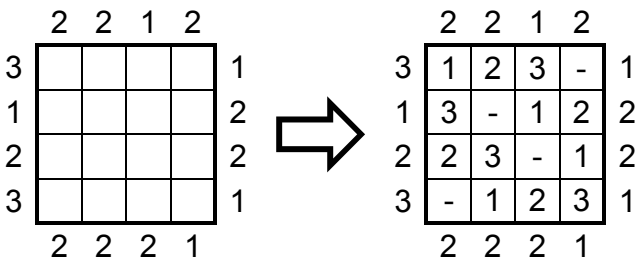
The grid symbolizes a neighborhood. Each row and column contains buildings of different heights. The numbers outside the grid indicate the **product of heights of the buildings visible** from that direction (the higher buildings hide the lower ones behind them).



Puzzle 4

Missing Skyscrapers

The grid symbolizes a neighborhood. Each row and column contains one empty plot and other plots are built up with buildings of different heights. The numbers outside the grid indicate **how many buildings are visible** from that direction (the higher buildings hide the lower ones behind them).



15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 7
individual

Sprint

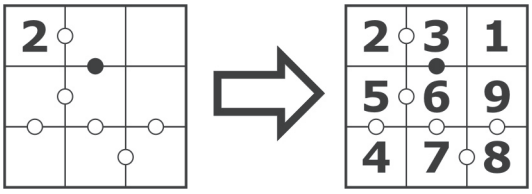
10th October 2006
09:30 - 09:55 (25 minutes)
Maximum score: 150 points

In this round score is given only based on number of correctly solved puzzles
1-2 puzzles - 5 points per puzzle
3-10 puzzles - 10 points per puzzle
11-14 puzzles - 15 points per puzzle

Puzzle 1

Mini Kropki

Fill the table with digits from 1 to 9 using each digit exactly once. White dots separate cells containing consecutive digits. Black dots separate cells where one digit is half of the other. The dot staying between "1" and "2" can have any of these colours.



Puzzle 2

Circle

Divide the circles into 5 sectors so that the sum of the numbers in each outer segment is equal to 25 and in each inner segment is equal to 20. Sector lines start at the center and are the same for all three circles.

Puzzle 3

Bank transfer

Nine banks from A to I have certain amount of coins. Take 2 coins from two banks (1 coin from each) and move them to some other two banks (for a total of four different banks) so that each row and column of banks has the same sum of coins.
Number of coins in banks should remain different from each other after the transfers.

Puzzle 4

Placing words

Fill the crossword with the given letter combinations, so as to read each one either across or down.

Puzzle 5

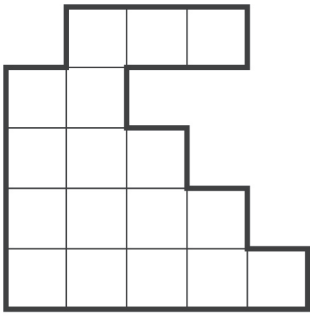
Portrait

Find the 10 differences between the two pictures. All 10 differences must be marked on at least one of the pictures.

Puzzle 6

Penta packing

ind two different pentomino elements that cannot be placed together in given container without overlapping. Elements can be rotated and/or reflected.



T X

Puzzle 7

Quipu

Till the middle of the 19th centurry herdsmen in Peru used ropes with knots called quipu to remember the number of animals they look after. They had one bundle of ropes for big and one for small animals.
How many animals altogether had the person with the quipu shown?

Puzzle 8

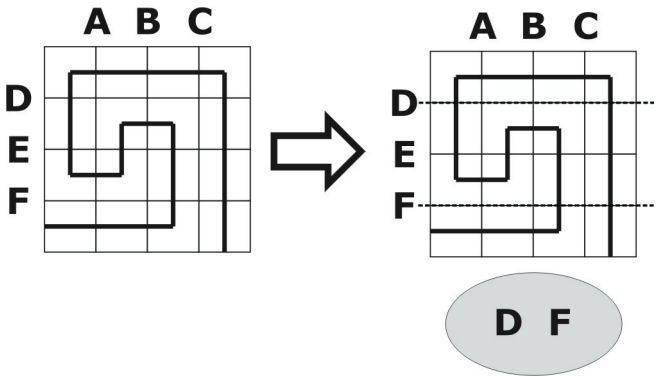
One cell left

Divide the grid shown into given pieces and you'll get one cell left. Pieces may be rotated but not mirrored.

Puzzle 9

String cut

Make two straight cuts along grid-lines throughout the whole grid to divide the string into the most possible number of pieces, all of different lengths.



Puzzle 10

Folding figure

Where must figure A be folded to get figure B?

Puzzle 11

Maze

Pass through the maze

Puzzle 12

Piramid

Fill in empty cells with correct 3-letter combinations.

Puzzle 13

LocoTrax

Once started, always keep going in the same direction. If you reach the end of a line, then reverse direction (Forwards to Reverse, or Reverse to Forwards). Pass through the minimum number of stations (not minimum total).

Puzzle 14

Two pairs

There are two pairs of same figures. Find all four figures.

15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 8
individual

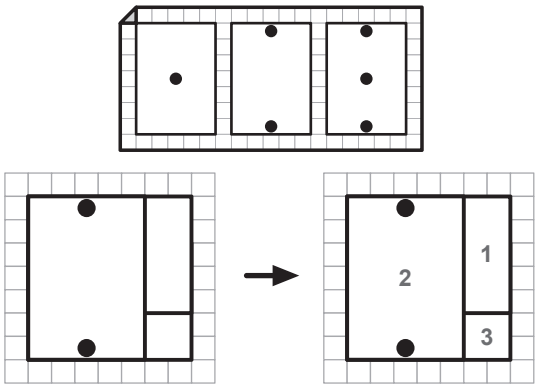
Assorted

10th October 2006
10:05 - 11:35 (90 minutes)
Maximum score: 500 points

Puzzle 1 (10 points)

Mixed Cards

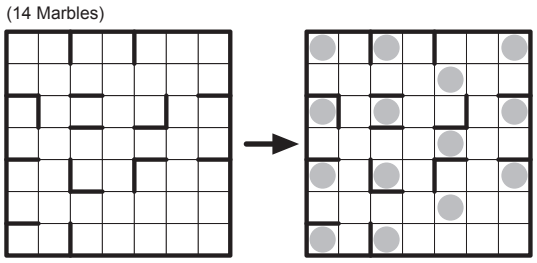
Playing cards (1-10) have been drawn on and cut out from the shown cardboard. Then all cards have been placed flat (without folding) to form the given orientation. Identify all cards. Grid lines are only given to show the true proportions of the cards and pips.



Puzzle 2 (10+20 points)

Marbles

Place given number of marbles into the grid without touching each other, not even diagonally. There are some walls, represented by thick lines, which block the view of the marbles. Marbles must not see each other in a horizontal or vertical direction.



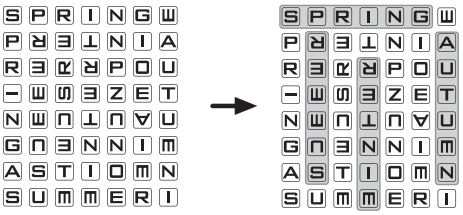
Puzzle 3 (25 points)

Word Search

Find and highlight all given words in the word list. Words may be found in any one of the four directions, written either across or down. No letter-card is used more than once.

Seasons in English:

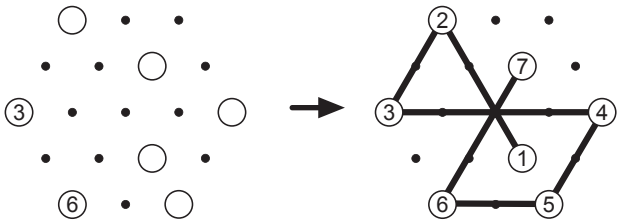
SPRING
SUMMER
AUTUMN
WINTER



Puzzle 4 (5+15 points)

Ordering

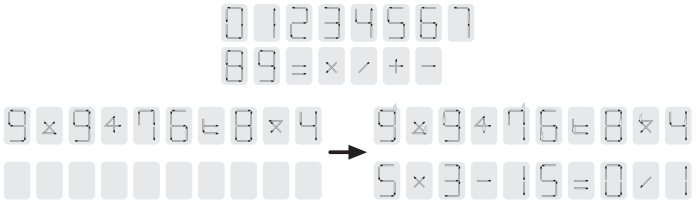
Draw a path starting with a circle, visiting each circle once and finishing on another circle by connecting each two consecutive circle pair with a straight line which makes a multiple of 60 degrees with the horizontal. Connection lines cannot overlap each other or pass through other circles. Start with “1” and give a consecutive number into each next circle on the path. Some numbers are already given.



Puzzle 5 (25 points)

Match Point

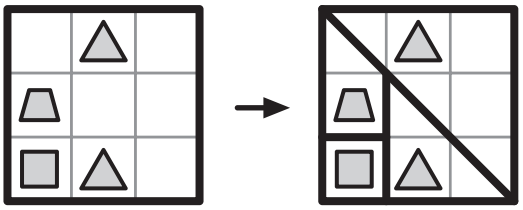
Light exactly one point in each box so as to leave a correct mathematical equation with only one equality sign. In each box, at least one match must light and at least one match must remain. Matches can only be set on fire at their coated ends; and once started, the fire continues until there are no coated ends it can reach. All digits and operation signs must be as in shown forms.
Multiple-digit numbers cannot begin with a “0”. Normal mathematical operation precedence applies (X and / before + and -).
Write the resulting equation to give your answer.



Puzzle 6 (20+20 points)

Geometric Shapes

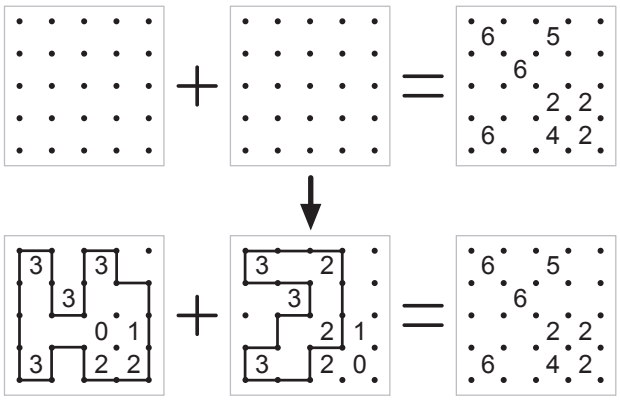
Divide the whole grid into smaller geometric shapes by drawing straight lines either following the full grid lines or the full diagonals of the square cells. Each formed shape must have exactly one symbol inside, which represents it. Rectangle symbol cannot be contained in a square. Trapezoid has two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



Puzzle 7 (15+20 points)

De-Fence

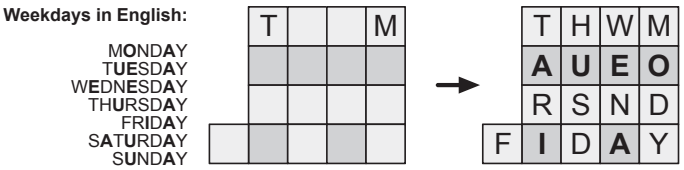
The goal in a Fences puzzle is to draw one loop (which doesn’t touch itself) by connecting neighbouring dots horizontally or vertically; so that each given clue in a cell indicates its number of edges used by the loop. For two separate Fences grids, clues that are in the same position have been added and the sum is given in that position in a third grid. Reconfigure the two starting grids and loops. Just drawing the loops is enough to give an answer.



Puzzle 8 (25 points)

Word Routes

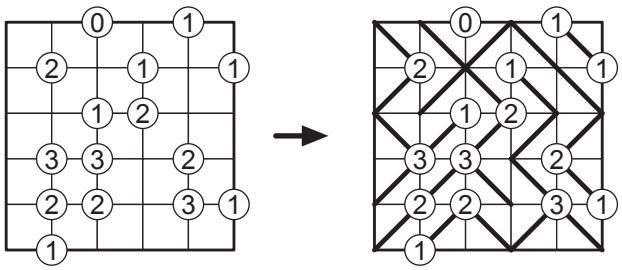
Place letters into the grid so as to read all the given words by proceeding from letter to consecutive letter moving between neighbouring cells. Two cells are neighbours if they share an edge or a corner. A letter can be used in the same word more than once, even consecutively. Light coloured cells must contain consonants, and dark coloured cells must contain vowels.



Puzzle 9 (10+25 points)

Slalom

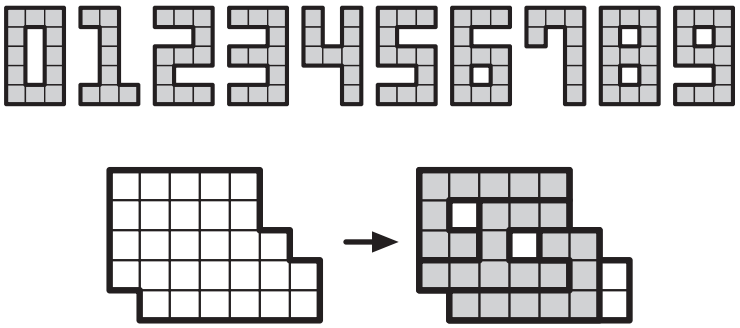
Draw one diagonal inside every cell of the grid so that each number at a corner tells the number of diagonals it touches. There must be no loops (a closed, continuous line) formed by the diagonals on the grid.



Puzzle 10 (20+20+25 points)

Sum Boxes

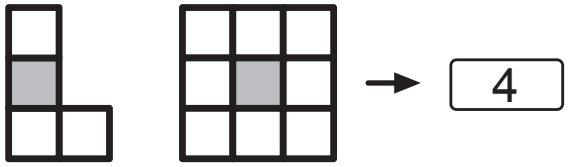
Place some digit figures (as shown) into the grid, following the grid lines, so as to reach to the maximum sum of digits possible (18 for the example grid). Figures can be used any number of times and can be rotated; but they cannot be reflected and they cannot overlap each other.



Puzzle 11 (30 points)

County

How many times is the small shape seen in the big shape? Small shape might be rotated, but not reflected.



Puzzle 12 (25 points)

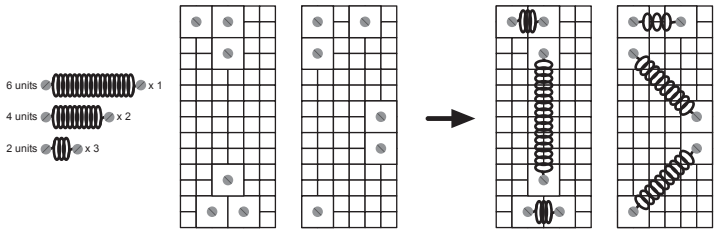
No Instructions

There are no instructions for this puzzle, except this. Analyze the given example and its solution, understand the rules and solve the puzzle.

Puzzle 13 (30 points)

Springs

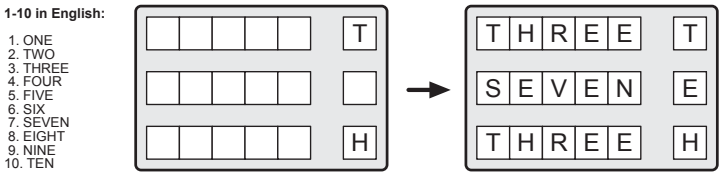
Locate the positions of the given 10 springs in the two grids (some are inside the first grid, others are inside the second). Each spring is positioned between two screws. Springs have various lengths and each spring can be extended up to 0,5 times of its original length, but they cannot be compressed to a smaller length. They cannot touch other springs or screws.



Puzzle 14 (5+10+40 points)

Self-referencing Cards

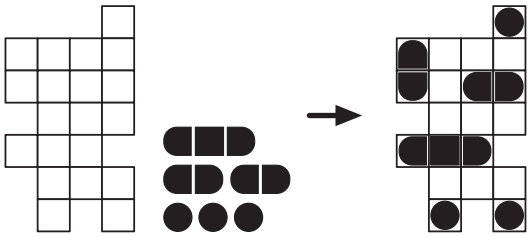
Enter a letter into each box inside the card. Each row in the card is a statement that consists of a number (as written in the given word list) and a letter; the number giving the correct usage count of that letter in the whole card. Letters must be different from each other, whereas numbers not necessarily.



Puzzle 15 (50 points)

Battleships Pool

Locate the position of the 10-ship fleet in the grid. Ships are oriented either horizontally or vertically; and they don't touch each other, not even diagonally.



15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 9
individual

Twins

10th October 2006
11:45 - 12:25 (40 minutes)
Maximum score: 200 points + bonus

1 bonus point for each 30 seconds saved
+
Bonus points for the first 10 puzzlers
(50,45,40,35,30,25,20,15,10,5)

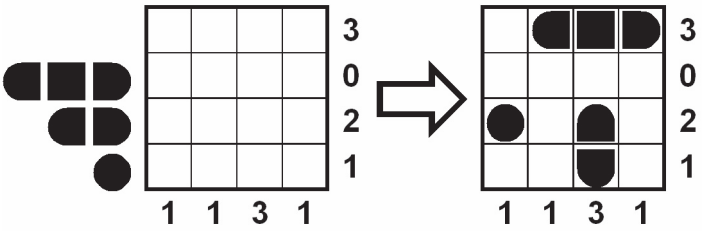
All puzzles in this round are pairs of two separate puzzles, which have some kind of mutual dependency.

Puzzle 1 (60 points)

Battleships

Locate the position of the fleet shown next to the grid. The ships do not touch each other, not even diagonally. The numbers outside the grid indicate how many cells in that row or column contain parts of ships.

These two puzzles are linked: if a cell in one of them contains a part of a ship, then the cell on the same position in the other puzzle must be empty.

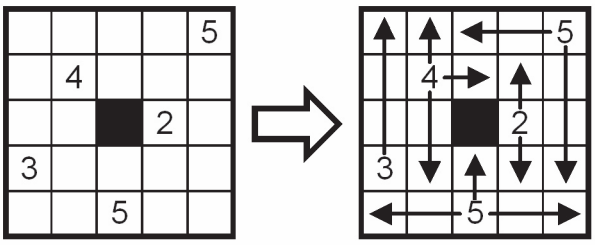


Puzzle 2 (35 points)

Along the lines

Beginning at each cell with a number, draw one or more horizontal or vertical lines. The lines originating from a given cell must cover as many cells as the number in the origin cell indicates (the origin cell is excluded). The lines may not intersect or overlap.

These two puzzles are linked: if a cell in one of them contains a horizontal line, then the cell on the same position in the other puzzle must contain a vertical line or a number and vice versa.

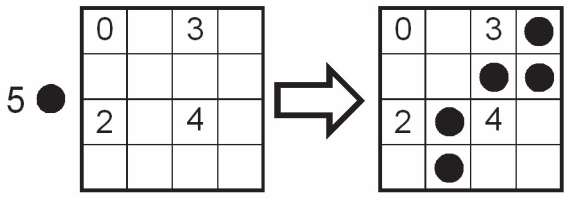


Puzzle 3 (55 points)

Mines

The empty cells of the grid are hiding the specified number of mines, at most one mine per cell. Each number within the grid indicates the number of mines in neighboring cells. There are 30 mines in each of the puzzles.

These two puzzles are linked: they may not contain any mines in the same positions.

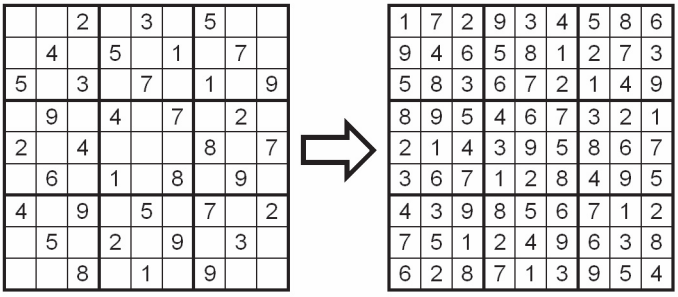


Puzzle 4 (50 points)

Sudoku

Place the digits 1~9 exactly once in each row, in each column, and in each black-edged region. Some of the numbers have been filled for you.

These two puzzles are linked: numbers occupying the same positions must be different.



15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 10
individual

Hexagonal

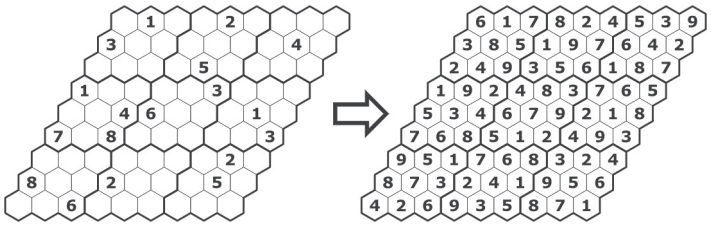
10th October 2006
14:00 - 14:40 (40 minutes)
Maximum score: 200 points+bonus

1 bonus point for each 30 seconds saved
+
Bonus points for the first 5 puzzlers
(50,40,30,20,10)

Puzzle 1 (50 points)

IsoSudoku

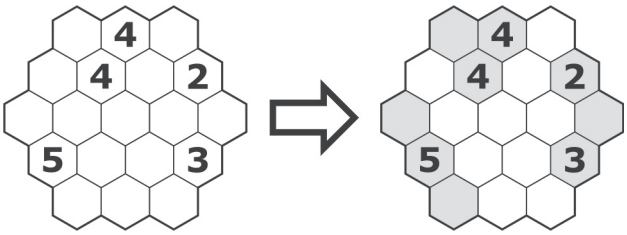
Fill in the grid so that every row, 9-cell diagonal, and 3x3 box contains the digits 1 through 9, once each. In the shorter diagonals all digits must be different.



Puzzle 2 (10+10 points)

Three/vision

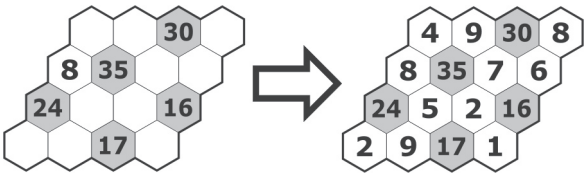
Place in grids some 3-cell fi gures, not touching one another. Digits in cells show the number of cells occupied by figures in the same row and both diagonals, not counting the cell with the digit itself. All cells with digits belong to the figures.



Puzzle 3 (45 points)

Hexagonal Cross-sum

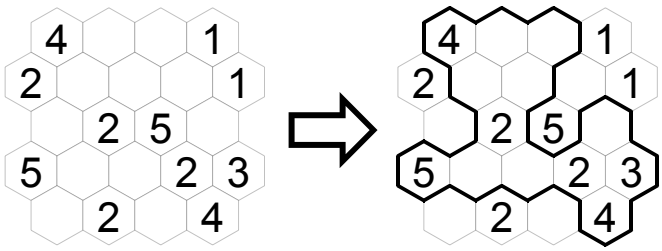
Fill in the empty cells with the digits 1 through 9 so that the numbers in grey cells show the total of all neighbouring digits. Digits around the grey cells cannot repeat.



Puzzle 4 (35+25 points)

Hexagonal Fences

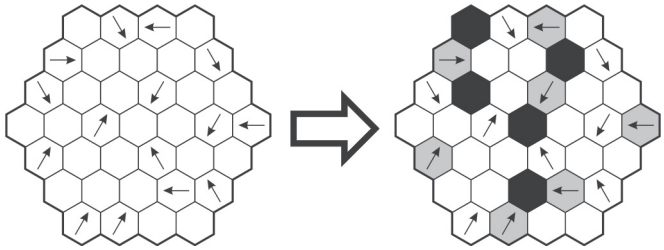
Draw a single continuous loop along the lines of the grid. The loop may not touch or cross itself. Each number shows the number of sides of the cell used by the loop.



Puzzle 5 (15+10 points)

Blackout

Blacken five empty cells so that every row and diagonal contains just one arrow pointing to exactly one blackened cell. Blackened cells cannot touch one another.



15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 11
individual

Assorted

10th October 2006
14:50 - 16:20 (90 minutes)
Maximum score: 500 points

Puzzle 1 (25 points)

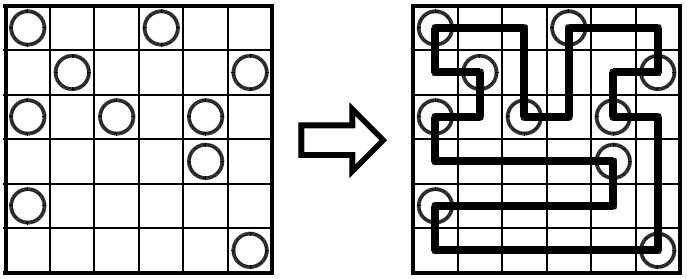
Playing cards

Find the correct second half of the playing card.

Puzzle 2 (10 points)

Every second turn

Draw a single continuous loop whose every second turning point is on a cell containing a circle, and every other turn is on an empty cell. The loop must travel horizontally and vertically, and must use each cell exactly once. Also, the loop must change its direction on every cell containing a circle.



Puzzle 3 (25 + 30 points)

Magic Square

Place the digits 1 to 7 (1 to 8 in the second puzzle) in each row, each column, and each of the two diagonals.

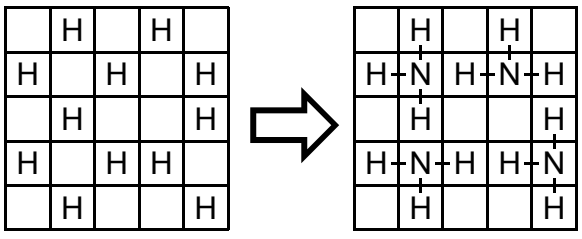
1		5		
			2	
		3		
			5	

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

Puzzle 4 (10 points)

Ammonia

Mark 20 atoms of Nitrogen and connect each one directly to 3 atoms of Hydrogen (horizontally and vertically), thus forming 20 molecules of ammonia.



Puzzle 5 (20 points)

Mesopotamian Math

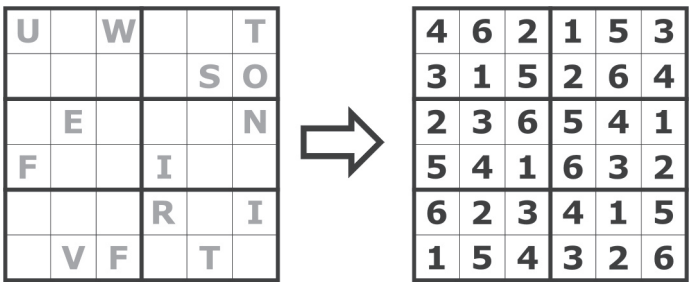
A part of Mesopotamian multiplication table is shown.
Fill in empty cells.

Puzzle 6 (45 points)

S FOR SUDOKU

Fill in the grid so that every row, column and 3x3 box contains the digits 1 through 9. Letters in cells stand for the digits which contain them in spelling.

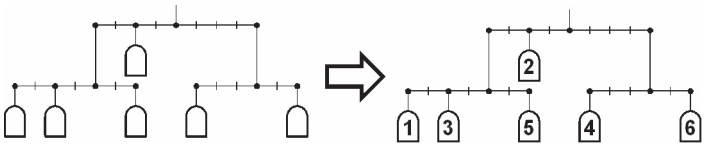
1 – ONE 2 – TWO 3 – THREE
4 – FOUR 5 – FIVE 6 – SIX
7 – SEVEN 8 – EIGHT 9 – NINE



Puzzle 7 (50 points)

SCALES

The scales are balanced by different weights from 1 to 12 kg. Write each weight.



Puzzle 8 (35 points)

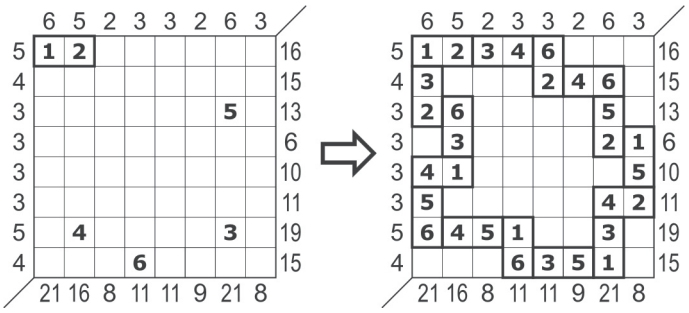
MULTIPLICATION

Replace each letter with a number between 1 and 9, so that the equation is correct.

Puzzle 9 (40 + 75 points)

ANTIDOMINO

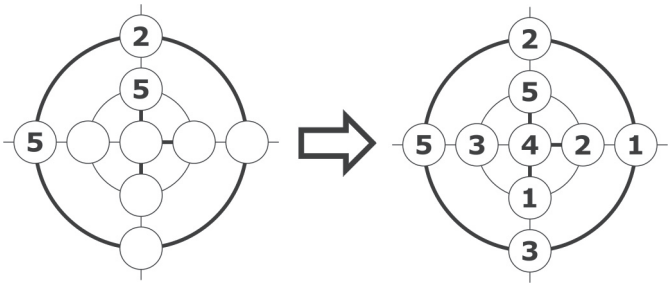
Using the given domino set build a single loop that doesn't touch itself even diagonally. Half-dominoes with the same value cannot touch each other, not even diagonally. Numbers at the top and on the left of the grid show the quantity of cells used by dominoes in corresponding rows and columns. Numbers on the right and at the bottom of the grid show the sum of values in corresponding rows and columns. No number can be repeated in any row or column.



Puzzle 10 (55 + 80 points)

WEB OF DIFFERENCE

Fill the empty circles with numbers from 1 to 9 (from 1 to 7 in the smaller web). Along the straight and radial lines numbers cannot appear more than once. All sums of numbers connected by thick lines must be different.



15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 12
team

The Weakest Link

10th October 2006
16:40 - 17:40 (60 minutes)
Maximum score: 750 points + bonus

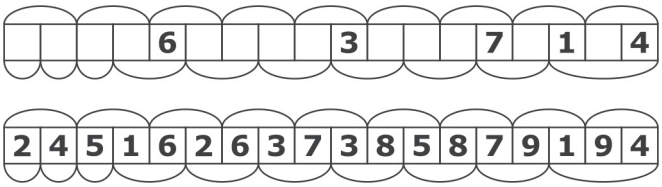
1 bonus point for each 10 seconds saved
+
Bonus points for the first 7 teams (150,120,100,80,60,40,20)

First puzzle in the round is individual. All team members will get the same set of 5 puzzles.
When a puzzler is ready with all 5 puzzles, the proctors checks the solutions and only then puzzler is allowed to the team desk, where he gets one corner of the giant sudoku.
Bonuses are given only when the entire giant sudoku is solved.

Puzzle 1 (4 * 5 * 20 points)

Total rising

Using each of the digits from 1 to 9 exactly twice create such a sequence, which, when divided to numbers in any of the two given ways, gives a continuously increasing sequence. Same digits cannot be placed in neighbouring cells.



Puzzle 2 (4 * 70 + 70 points)

Giant Sudoku

The giant sudoku consists of 5 intersected sudokus. Fill in all all cells with the digits from 1 to 9 so that for each of the 5 sudokus: each digit is used exactly once in each row, each column and each black-edged region.

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BOROVETS, BULGARIA 2006

Part 13
individual

Mitre Square

11th October 2006
09:30 - 10:00 (30 minutes)
Maximum score: 100 points + bonus

1 bonus point for each 30 seconds saved
+
Bonus points for the first 15 puzzlers (45,42,39,36,33,30,27,24,21,18,15,12,9,6,3)

This is a manipulative puzzle

Puzzle 1 (25+75 points)

Mitre Square

Make a Square, with no two areas of the same colour sharing a common boundary.

Envelope S: contains a single sided puzzle, 12 pieces

Envelope D: contains a double sided puzzle, 12 pieces
You have to arrange only top face of the square, deciding which side of pieces should be on top.

Help: upon player's request proctors will provide a sheet with the list of numbers indicating which sides should be on top.
If help is used only 25 points will be awarded for correctly solving this puzzle and competitor won't be eligible for bonuses.

15th World Puzzle Championship
BOROVETS, BULGARIA 2006

PART 14
team

METATOUR

11th October 2006
10:20 - 11:00 (40 minutes)
Maximum score: 500 points + bonus

1 bonus point for each 10 seconds saved
+
Bonus points for the first 5 teams (150,120,90,60,30)

Each of the four puzzles in this part is cut into 9 pieces.
Four sheets one per puzzle will have the central piece printed and you'll get an envelope with remaining 32 pieces. Corners are rounded so it will always be clear if it is a corner and which corner exactly, but not which puzzle the piece belongs to.

The team will receive 4 sets of the puzzles. This not needed for solving the puzzles, but just to give you more flexibility. Your are not required to use more then one set. Each set will have its pieces colored with different background color. You may not mix pieces from different sets in one puzzle you submit.

Your task is to combine four complete puzzles from the pieces provided and solve them. For every of the four puzzles it may be possible to combine pieces and get a solvable puzzle in more then one way. But there is a single solution when you can have all four puzzles solved, take.

You may also get partial points:
If you correctly combine a puzzle, but had no time to solve it, then you'll get 75 points for that puzzle.
If you combine and solve a puzzle that is not a part of the correct complete solution, you will get 50 points for it.
Note: You may submit more then one solution for a puzzle, but only one of them will earn points.

Puzzle 1 (125 points)

SUDOKU

Fill in the grid so that every row, column and 3x3 box contains the digits 1 through 9. Grey cells must contain the same digits.

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

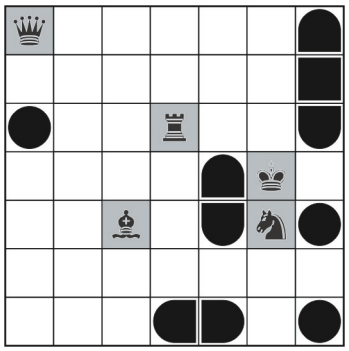
⇨

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

Puzzle 2 (125 points)

Chess Battleships

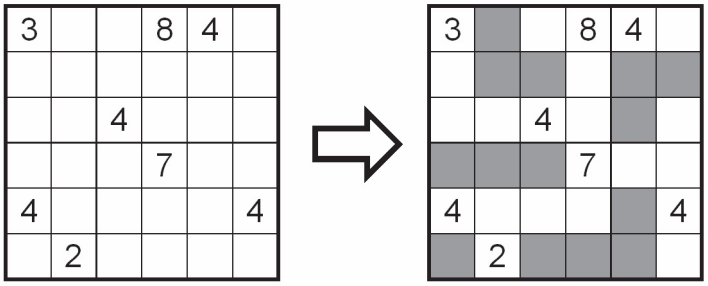
Place five different chess pieces (a king, a queen, a rook, a bishop and a knight) in the grey cells, and a complete set of battleships (one 4-cells long, two 3-cells long, three 2-cells long and four 1-cell ships) in the remaining area, so that each piece attacks exactly one ship of every kind. Ships cannot touch each other, not even diagonally. Digits show the number of surrounding cells occupied by the ships. Cells with digits are not occupied by the ships.
Note: The digits do not hide the ships. The chess pieces and the ships hide other ships.



Puzzle 3 (125 points)

Cave

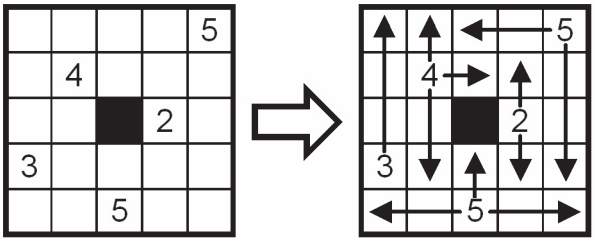
Blacken the rock of the cave to outline its tunnels. The tunnels may fork, but may not form loops. Each cell with a number indicates the number of tunnel cells, including the cell with the number, visible from that position. No part of the tunnel may have a size of 2x2. Grey cells are outside the tunnels.



Puzzle 4 (125 points)

Four winds

Starting at each cell with a number, draw one or more horizontal or vertical lines. The lines originating from a given cell must cover as many cells as the number in the origin cell indicates (the origin cell is excluded). The lines may not intersect or overlap. Grey cells must be filled with the same numbers.



15th World Puzzle Championship
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Part 15
individual

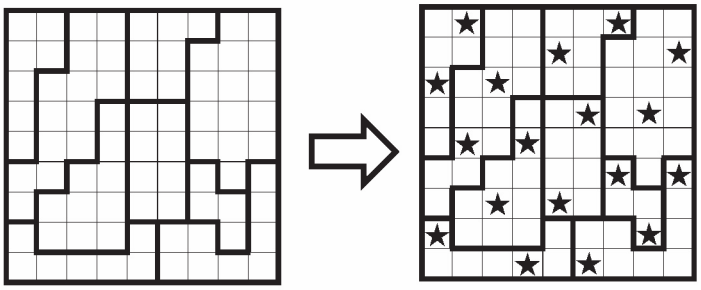
Semi-final

11th October 2006
11:20 - 11:50 (30 minutes)
Maximum score: N/A

Puzzle 1

Star battle

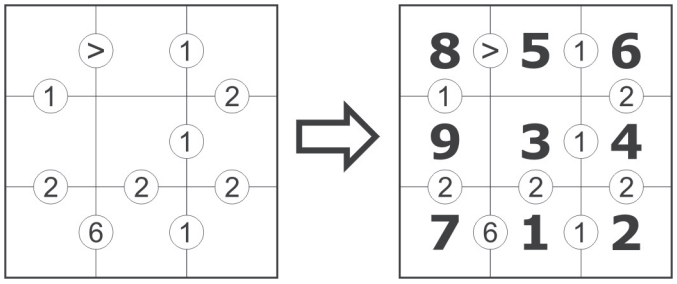
Place two stars in each row, each column, and each black-edged part of the grid. The stars do not touch each other even diagonally.



Puzzle 2

1 to 16

Fill the grid with numbers 1 through 16. Digits between the cells show the difference of two numbers in these cells. Comparison signs must be true.



Puzzle 3

Mayas' Math

In the Mayas' civilization there was a system of writing numbers used by astronomers and priests.
Below you see some numbers written in both Mayas' and decimal systems. Fill in the missing ones.

Puzzle 4

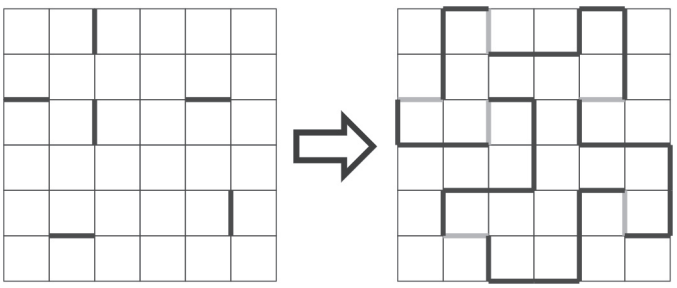
Thai word search

Some words in Thai language are written in the grid horizontally, vertically, or diagonally.
Find and mark them.

Puzzle 5

L-oop

Using only L-shaped figures (1x2) and lines already placed in grid build the single closed loop that does not cross or touch itself, not even diagonally. Figures cannot overlap each other or lines already placed.



15th World Puzzle Championship
BOROVETS, BULGARIA 2006

Part 16
individual

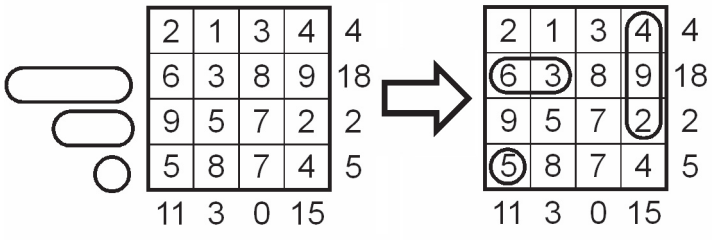
Final

11th October 2006
12:00 - 12:30 (30 minutes)
Maximum score: N/A

Puzzle 1

Number battleships

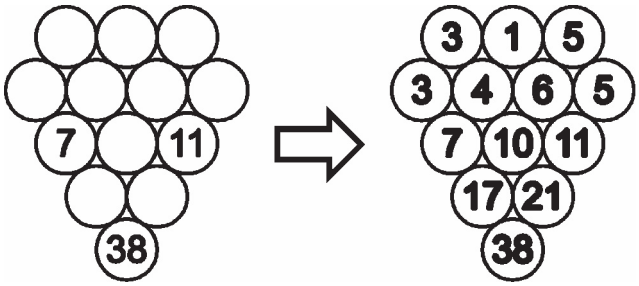
Locate the position of the fleet shown next to the grid. The ships do not touch each other, not even diagonally. The numbers outside the grid indicate the sum of numbers in cells in that row or column containing parts of ships.



Puzzle 2

Cluster

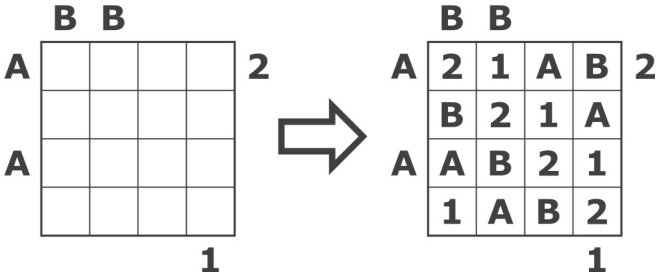
Number in each circle of lower rows is equal to the sum of the neighboring numbers from the row above it. Fill in all numbers so that you have different numbers from 1 to 9 in the top row



Puzzle 3

Easy as skyscrapers

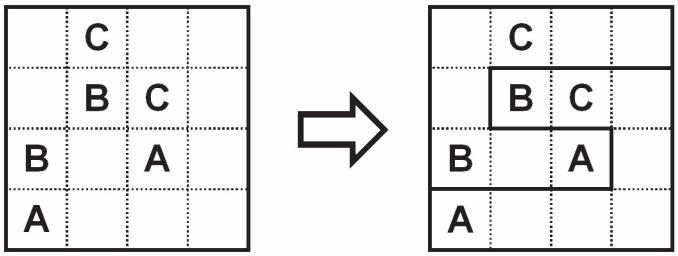
Fill the grid with numbers from 1 to 3 (representing the heights of buildings) and letters A, B, C, so that each row and column contains exactly one instance of all these symbols. Digits outside the grid show the number of buildings visible from their positions (shorter buildings are hidden behind the taller ones). Letters outside the grid appear first in corresponding directions.



Puzzle 4

Cut by numbers

Cut the figure following the gridlines into two figures with same shape and size, each containing all the numbers from 1 to 13.



Puzzle 5

Dancers

One of the pictures is original and other two are copies. There are 10 differences between the original and each copy. Find the original and mark the 10 differences in each of the two copies.