Indian Puzzle Championship 2011 - Finals

12-Jun-2011, Bangalore

Round	Minutes	Start Time	Total Points	# of puzzles	Bonus
1	60	11:00 AM	600	20	10 points p.m.
2	60	12:15 PM	800	8	10 points p.m.
3	60	14:30 PM	700	20	10 points p.m.

Round 1		
✳	ABC Connection	
✳	Triangle Math	
	Diagonally Magic Squares	
	Tiger In The Woods	
	Different Sums	
✳	Tent Sector	
	Anglers	
	Queens' Park	
✳	Submarines	
✳	Hexa Seven	
	Domino Skyscraper	
✳	Hexa Fences	
	No Four in a Row	
✳	Sunspots	
✳	Sign of Four	
	Star Battle	
	Every Second Straight	
✳	Fifty-fifty	
	Extra Loopfinder	
✳	Area occupation (Fillomino)	

Check page 2 for points distribution.

Round 2		
	Every Second Breakpoint	120
	Fence	80
	Kakuro	160
	Light Up	40
	Minesweeper	80
✳	Nurikabe	140
	Paint By Number	80
✳	Tapa	100

Round 3		
✳	Creek	25 + 45
✳	Digit Battleship	15 + 65
	First or Last	25 + 50
✳	Four Snails	15 + 40
	Frameless Sudoku	20 + 70
✳	Masyu-Fence	20 + 40
✳	NEWS	40 + 55
✳	Polywords	25 + 45
✳	Trid	20 + 40
✳	Turning Points	10 + 35

Acknowledgements

Round 1

Points will be awarded based on number of puzzles solved.

Note that in the puzzle booklet, puzzles will be sorted based on relative order of difficulty (easiest puzzles first). This order is shown in page 1.

Number of correct puzzles	Points	Number of correct puzzles	Points
1	10	11	210
2	20	12	240
3	30	13	280
4	40	14	320
5	60	15	360
6	80	16	400
7	100	17	450
8	120	18	500
9	150	19	550
10	180	20	600

Round 2

All puzzles in this round will be of size 20X20.
Partial point (50% of the puzzle value) will be given, if 3 of the 4 10X10 quadrants are as per the expected solution.
Puzzles will be sorted alphabetically, as shown in page 1.

Round 3

Each puzzle type in this round will have one easy puzzle and one not-so-easy puzzle.
Puzzles will be sorted alphabetically, as shown in page 1.

Time bonus

In each round, bonus of 10 points per minute saved will be awarded if all puzzles are correct.

Tie Breaker

Ties will be broken using following rules:
    i)   Maximum points in Round3 (including bonus points in Round3)
    ii) Maximum points in Round2 (including bonus points in Round2)
If there is still a tie to determine the top 3 positions, tie-breaker puzzles will be used.

## Notes about difficulty / grading / points allocation

Difficulty for each puzzle is determined based on test timings of several test solvers. Points are generally indicative of the difficulty of the puzzles and time required to solve it. However, your personal experience and preference might differ.

Other notes

Printout of this booklet will not be provided at the event. Participants have to carry on their own, if they need it.
Participants are expected to carry writing materials (e.g. their lucky pencil, eraser, writing pad etc)
Any kind of external help (e.g. calculators, multiplication table) is not allowed.

ABC connection

Connect identical letters with lines that are only horizontal and vertical and always connect the centres of adjacent squares. Lines don't cross or overlap with each other.
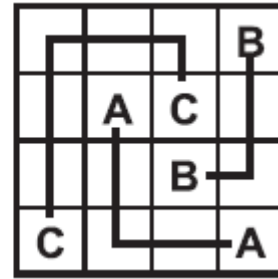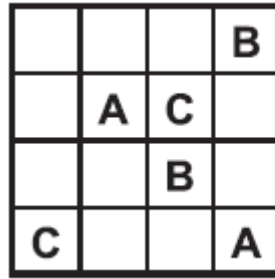
Anglers

The grid represents a lake and some squares contain a fish. There are a few anglers sitting around the lake, each of whom has caught a fish. The cords only travel horizontally or vertically and do not cross or overlap themselves or each other. Numbers reveal the length of the cord that connects the given angler with their fish.
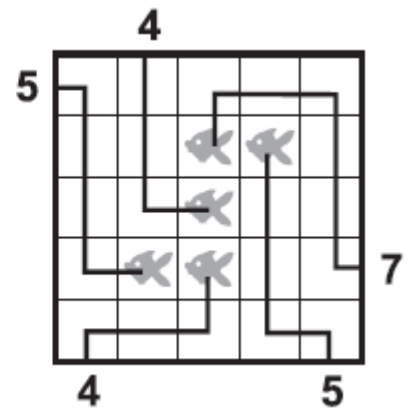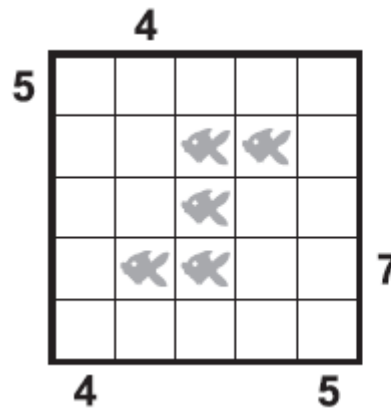
Area Occupation (Fillomino)

Write digits into the empty squares in a way that each digit must be part of a connected area consisting of as many digits as the digit itself. Two areas of the same size may only touch each other diagonally.
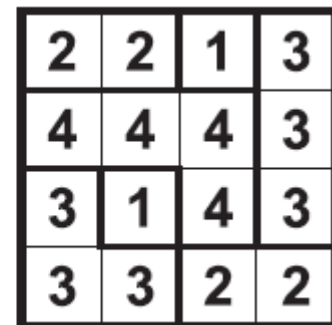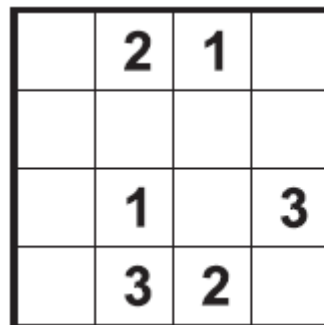
Diagonally Magic Squares

Fill in the grid so that each row, column and diagonal contains each number between 1-6 exactly once.

(*Example uses 1-5*)
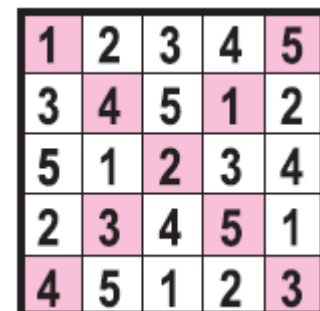
Different Sums

Pair the numbers in the grid so that the sum of any two pairs is different. Lines that connect the members of different pairs cannot cross each other.
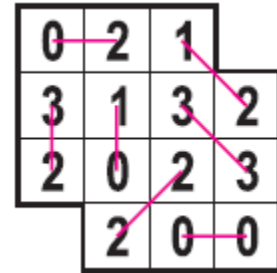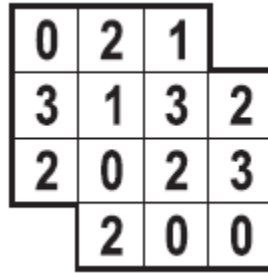
Domino Skyscraper

Place the given set of dominoes into the grid so that no number is repeated in any row or column.

Numbers on the dominoes are to be treated as skyscrapers whose height is equal to the number they are standing on. Numbers around the grid reveal the number of different skyscrapers visible from that direction. A skyscraper is visible from a viewpoint if and only if it is bigger than any other skyscraper that is closer to the viewpoint in the same direction.
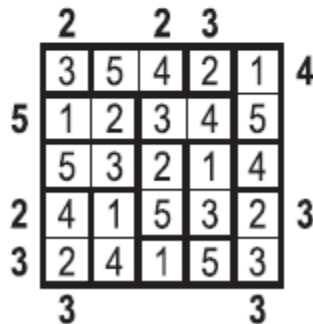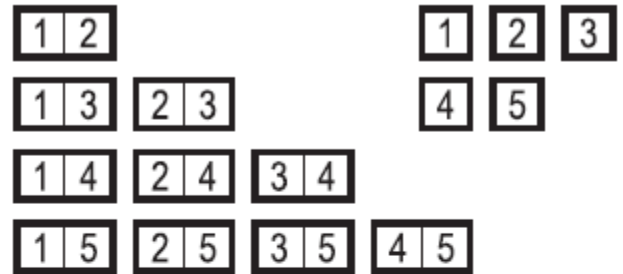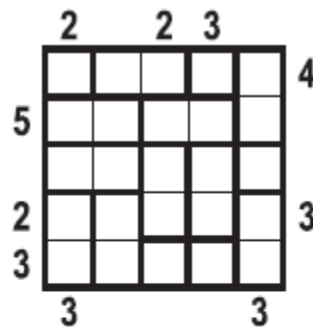
Every Second Straight

Draw a single closed loop that passes through each square exactly once and never crosses or overlaps itself. The path travels horizontally and vertically, but never diagonally.

The loop passes straight through every circle. Along the loop, between each consequent two circles there is exactly one cell without circle where the loop goes straight.
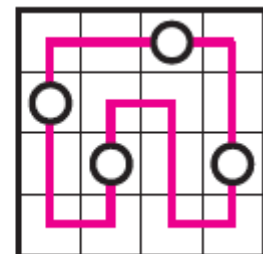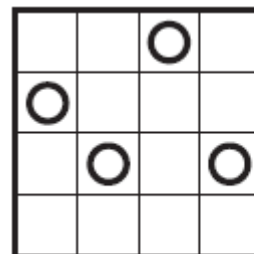
Extra Loopfinder

Paint a few squares black so that every area surrounded by thick lines contains exactly one black square and no two black squares share an edge (they may touch diagonally).

Then draw a single continuous loop that only travels horizontally or vertically and travels through all squares.
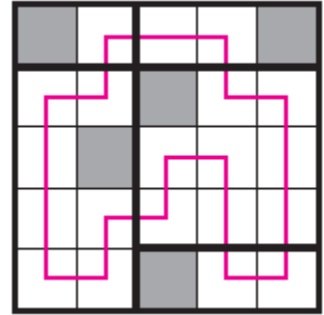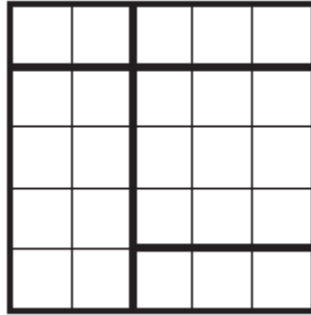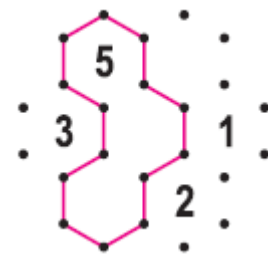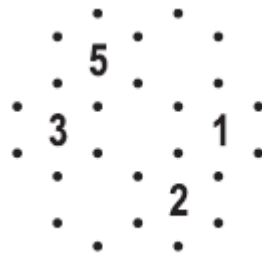
Fifty-Fifty

Paint some more triangles so that every equilateral hexagon that consists of six small triangles has three painted triangles and three white triangles.

Hexa Fence

Draw a single closed loop that only travels on the hexagonal sides marked by the dots. Numbers reveal how many edges around the number are contained in the loop.
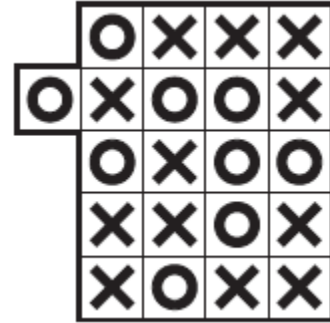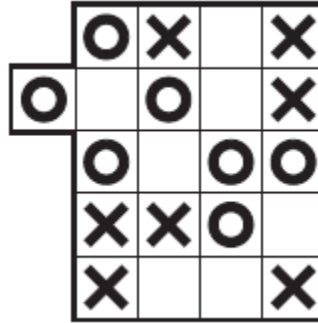
Hexa Seven

Write numbers between 1 and 7 into the white hexagons so that the neighbours of each white hexagon are all different.

No Four In A Row

Fill in the grid with O's and X's so that four consecutive identical letters in a row, column or diagonal never occur.


Queens' Park

Place nine queens into the grid so that none of them stands on a number and each number equals to the number of directions from which the given square is attacked by a queen. A queen attacks to arbitrary distance horizontally, vertically and diagonally.
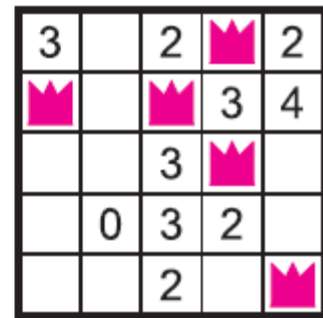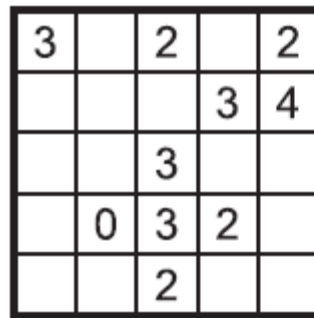
(*Example uses 5 queens*)


Sign Of Four

Divide the grid into connected pieces consisting of four squares apiece. Numbers outside the grid reveal the size of groups belonging to the same piece in the given row or column. However, numbers are shown in increasing order, not in the order the pieces appear.
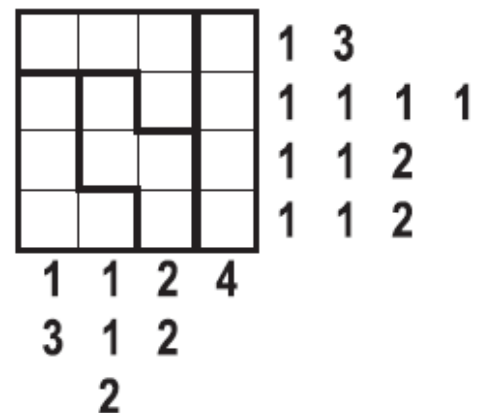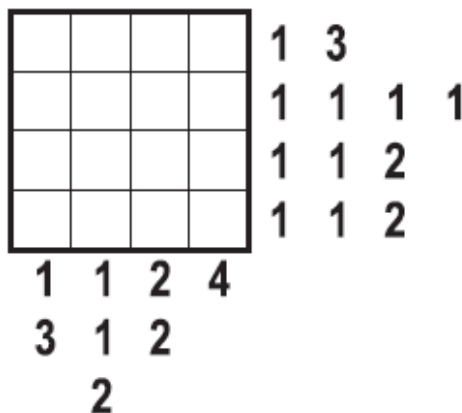
Star Battle

Mark several squares with stars so that there will be two stars in each row, column and in each area surrounded by thick lines. Stars may not touch each other, not even diagonally.
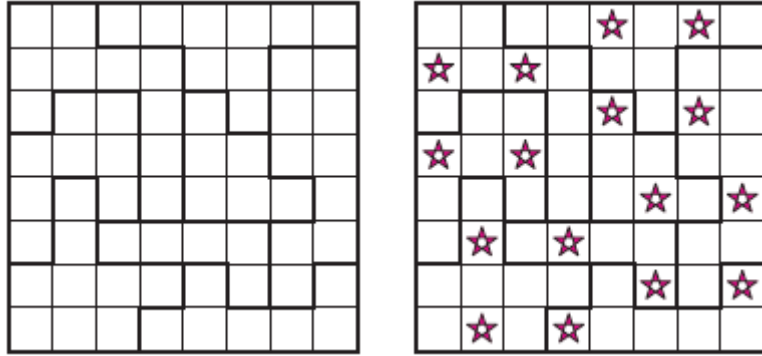

Submarines

There are 10 submarines boats hiding in the grid, each occupying a single square. They do not touch each other, not even diagonally, and they cannot be in squares marked with water. Numbers outside the grid reveal how many submarines can be found in the given row, column or main diagonal.

(*Example uses 9 submarines.*)
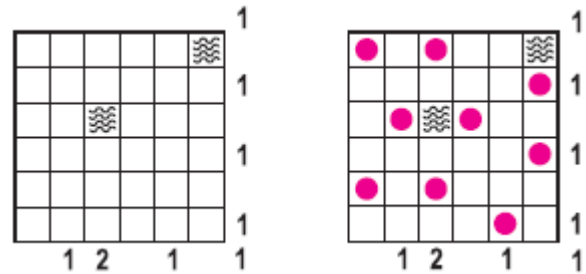
Sunspots

Paint a few triangles black, these will represent sunspots. Numbers around the grid reveal how many sunspots are visible combined in the two directions that are visible from the given number. No two sunspots can touch each other, not even at a single point.
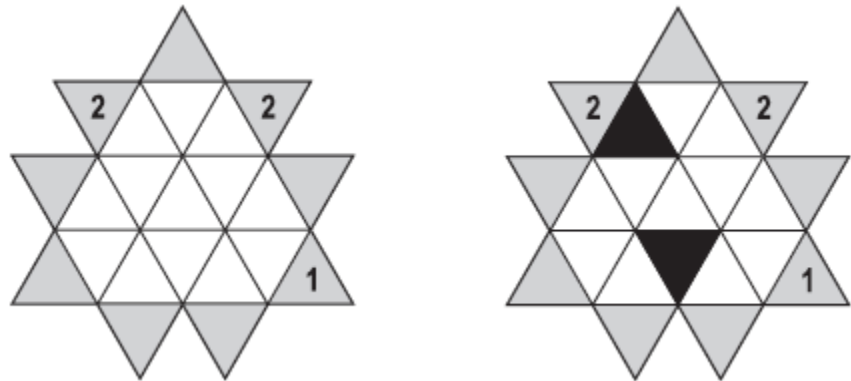

Tent Sector

Each tree in the figure has a tent attached to it that has to be in an edge-adjacent square. Tents do not touch each other, not even diagonally. Every sector (marked by thick lines) contains the same number of tents.
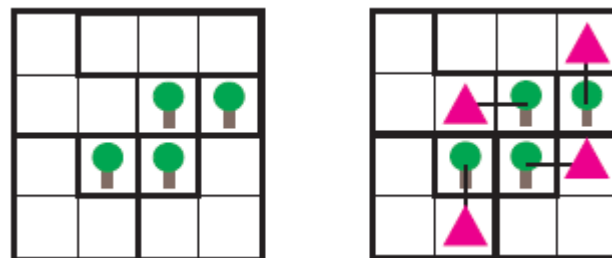
Tiger In the Woods

Draw a path into the figure that starts from an arbitrary white square, only travels horizontally and vertically, and passes through all white squares. The path may cross itself but it may not overlap itself. The path is only allowed to take a turn after hitting either a black square or a wall. The starting square may not be visited later, and the finishing square cannot have been visited before.
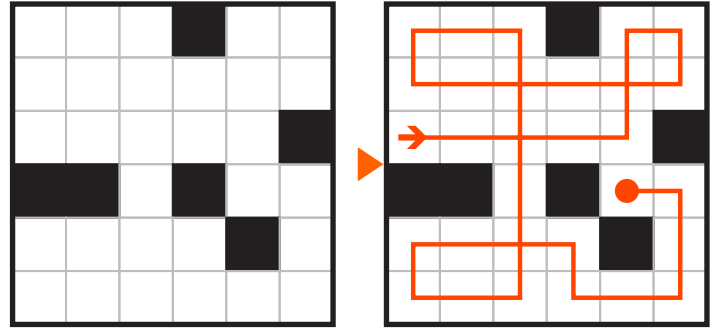
Triangle Math

Place the numbers 1-10 into the white triangles, once each, so that the sum of any three numbers surrounding a grey triangle equals to the number written into the grey triangle.
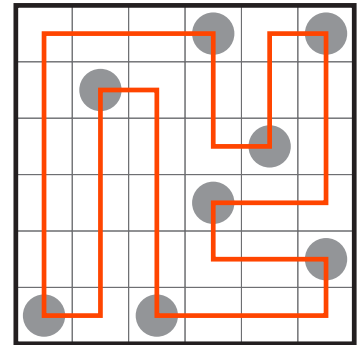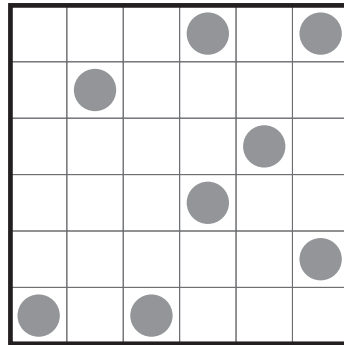
(*The example uses 1-6.*)
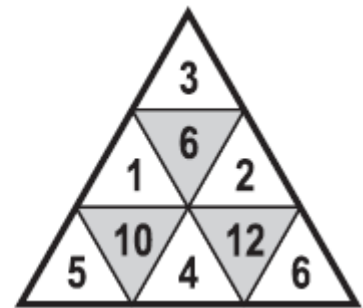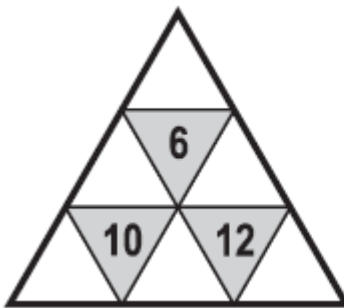
Every Second Breakpoint

Draw a single closed loop visiting all cells in the grid using horizontal and vertical segments. It does not cross or overlap itself. It makes 90° turn at every cell with a circle. There is also exactly one 90° turn between two consecutive circles that the loop visits.

Fence

Draw a single continuous loop along the dotted vertical or horizontal line segments. Crossovers or branches are not allowed. Numbers given inside the cell indicate the count of line segments surrounding that cell.
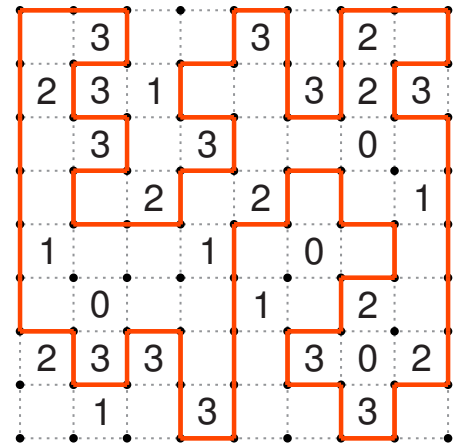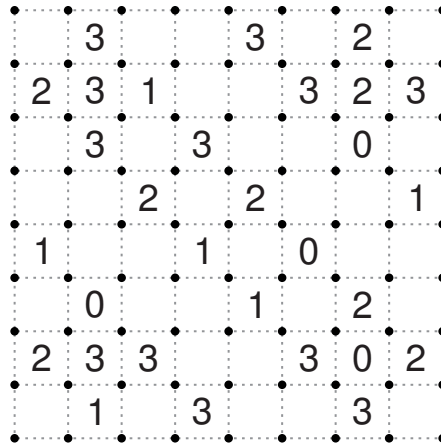
Kakuro

Place one digit from 1 to 9 in each empty square so that the sum of the digits in each set of consecutive white squares (horizontal or vertical) is the number appearing to the left of a set or above the set. No number may appear more than once in any set of consecutive white squares.
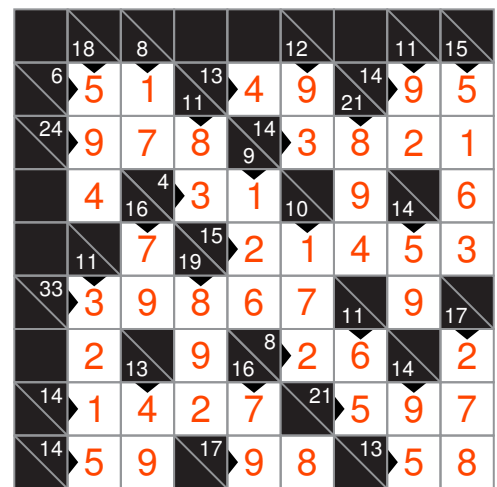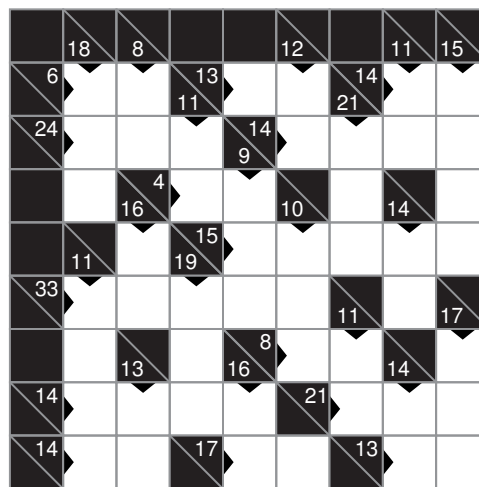
Light Up

Place light bulbs in some white cells in the grid so that every white cell in the grid is lit. A cell is illuminated by a light bulb if they are in the same row or column, and if there are no black cells between them. No light bulb may illuminate another light bulb. A number in a black cell indicates the number of light bulbs sharing an edge with that cell.
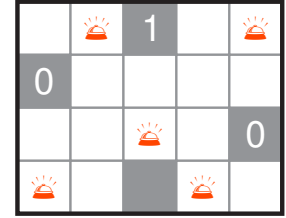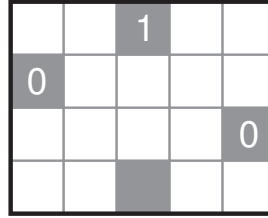
Minesweeper

Place mines into some empty cells in the grid such that the numbers in the grid represent the number of mines in the neighbouring cells, including diagonal ones.
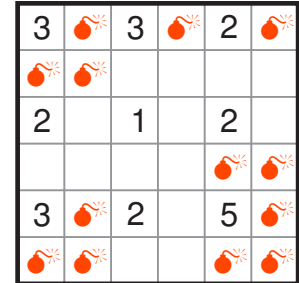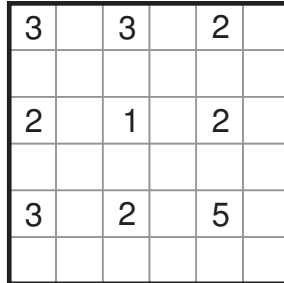
Nurikabe

Shade some cells in the grid, such that the shaded cells form a connected area via horizontal and vertical paths, and so that there are no 2x2 area of cells completely shaded. The remaining unshaded cells should form several connected islands. Each island should contain exactly one given number in the grid, and this number represents the number of cells of its corresponding island.
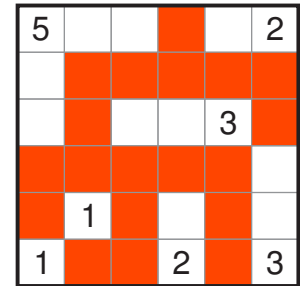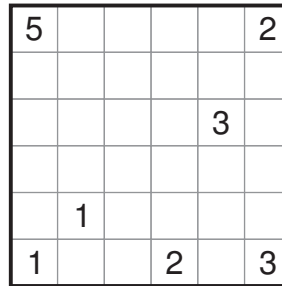
Paint-By-Number

Blacken some of the cells to find out the hidden figure. The numbers on the sides of the grid give the number of black cells in a stretch in order, for the corresponding row or column. The black regions are separated by one or more empty cells.
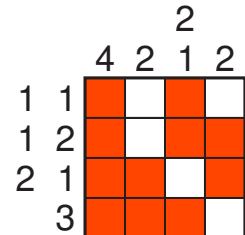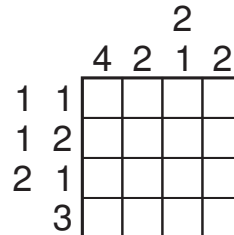
Tapa

Shade some cells black to form a continuous wall. There cannot be a 2×2 square of cells that are all shaded. Numbers in cells indicate the length of connected black cell groups in the neighbouring cells; if there is more than one number in a cell, then there must be at least one white cell between each of the indicated black cell groups. Cells with numbers cannot be a part of the wall
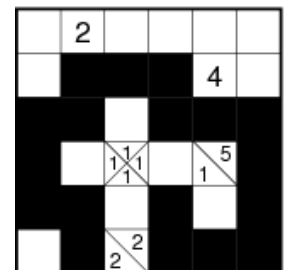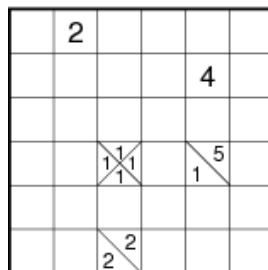
Creek

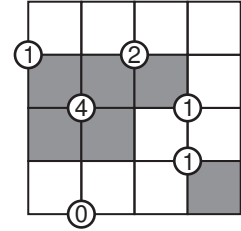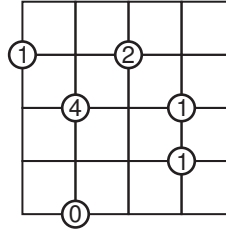Shade in some squares of the grid, so that the numbers inside the circle represent number of shaded grids they touch. The unshaded cells must form a single continuous region.

Digit Battleships

Locate the indicated 6- or 10-ship fleet in the grid. Each segment of a ship occupies a single cell. Ships are oriented either horizontally or vertically, and do not touch each other, not even diagonally. Some ship segments, or sea cells without any ship segments, are given in the grid. The segments of each ship are labeled with digits as shown in the fleet diagram, and the numbers on the right and bottom edges of the grid reveal the sum of all the digits that appear in that row or column. Ships can be rotated before entry into the grid
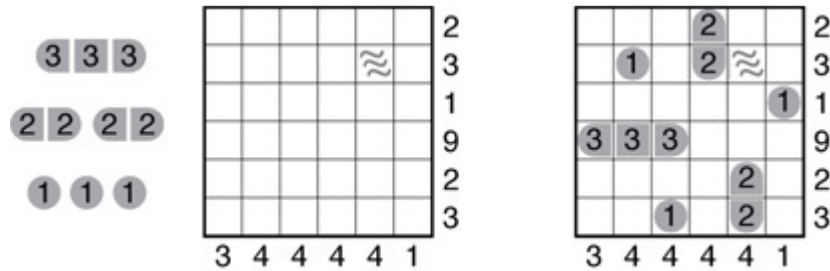
First or Last

Place a letter from the given range in each cell, so that each letter occurs exactly once, in all rows and columns. One cell will remain empty in each row and column. The letter outside the grid is either the first letter or the last letter seen from that direction.
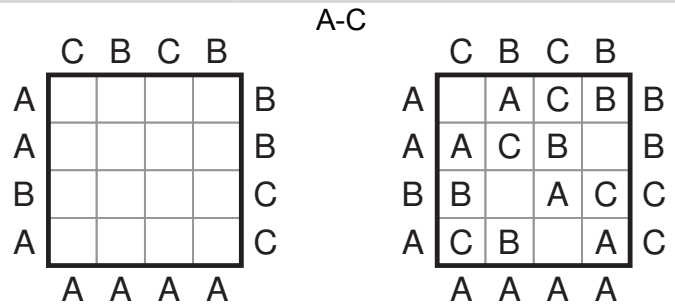
Four Snails

Write the names from the list along the snails, in the order from outside towards the middle. The same letter cannot appear more than once in each row and column. Sign "-" means there is no letter in the cell. Some letters are already given.

ATHENS
MOSCOW
NEW YORK
SYDNEY
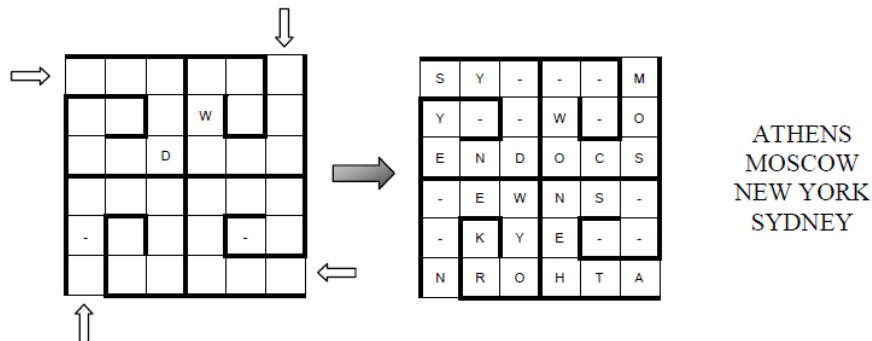
Frameless Sudoku

Place digits from the given range in each blank cell so that every row, every column, and every outlined must have distinct digits. Clues outside the grid represent the sum of the first X numbers closest to the edge. X may be any amount of digits and may be different for each sum.

Left grid (clues):

Top: 11 7 17 9 3 13
Left (rows): 11, 10, 15, 11, 10, 15
Right (rows): 10, 2, 6, 4, 3, 5
Bottom: 10 7 4 12 3 8

Right grid (solution):

Top: 11 7 17 9 3 13

11	5	4	2	1	3	6	10
10	1	3	6	5	4	2	2
15	2	6	4	3	5	1	6
11	3	1	5	2	6	4	4
10	4	5	1	6	2	3	3
15	6	2	3	4	1	5	5

Bottom: 10 7 4 12 3 8

Masyu-Fence

Draw a loop following the gridlines. The loop does not touch or cross itself. A digit in a cell indicates the number of edges used by the loop. The loop must visit all circles. It must turn at every black circle, but cannot turn immediately before or after. And the loop must go straight at every white circle, but must turn immediately before and/or after.

NEWS

Place N(north), E(east), W(west) or S(south) in the grid so that each outlined region contains exactly two directions. Directions in each region should satisfy their positions with respect to each other. No direction can be repeated within a row or a column.

Polywords

Enter all of the given 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" (in the example) have already been placed in the grid.
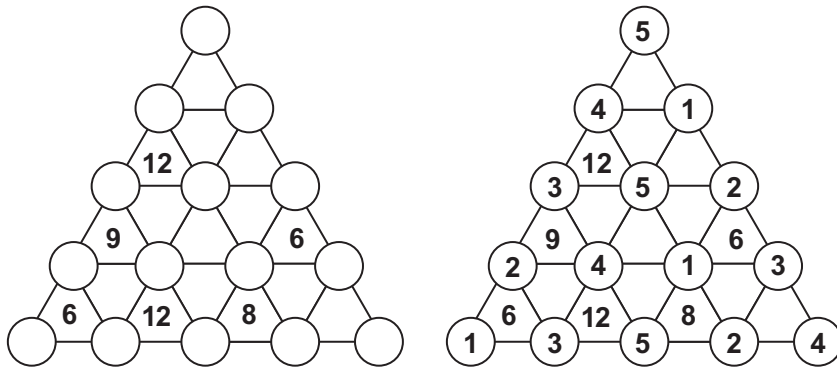
POLAND
POLISH
POLTROON
POLYURIC

OUTPOLLED
TROPOLOGIC

GOSSYPOL

Solution grid (right):

```
O U T PoL L E D
      R
  G O S S Y PoL
      PoL      Y
PoL T R O O N  U
A     G        R
N PoL I S H    I
D     C        C
```

IPC 2011

Trid

Place digits from the given range in each of the circle so that no digit is repeated within any straight line. Each number in a triangle equals to the sum of digits in the triangle's vertices.

(The example uses 1~5)

Turning Points

Draw paths that connect each pair of numbers, with every cell in the grid used in exactly one path. There must be exactly N turns in the path connecting each number N.