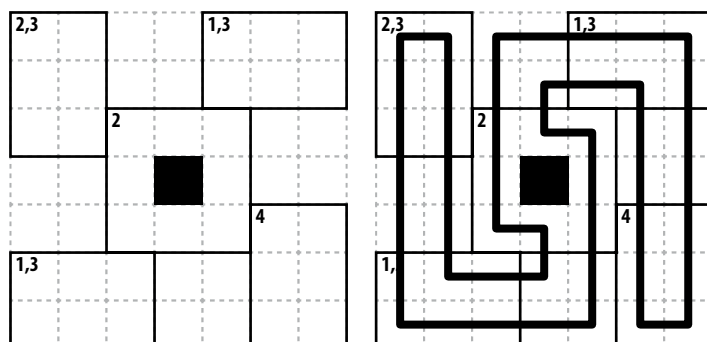




5. Six Cells (cube nets) [4-Germany: Martin Ender] (74 points)

Divide the grid along the dashed lines into regions so that the shape of each region can be folded up to become a cube (each face of the cube being a single cell). It is permissible for a region to include all three cells touching the same corner of the cube (in which case that corner counts as being already folded).

Inside some cells are numbers; each number indicates the number of cells that both share an edge with that cell and are *not* in the same region of that cell.

The competition puzzle will be presented on the faces of an actual cube. To indicate a solution, the solver must either draw connection lines indicating adjacent cells that are the same region (cyan lines in the example solution), or draw borders indicating adjacent cells that are not in the same region (black lines in the example solution), or a combination of both. A valid solution must indicate unambiguously how to divide the grid into regions. For cell edges that are represented twice on the actual cube, it is sufficient to draw the line or border along just one of the edges.

The orientations of the numbers in the cells do not have any special meaning.

6. Compass [5-Japan: Aoi Nakano] (119 points)

Divide the grid along the dashed lines into regions (groups of cells that are connected orthogonally). Each cell must be in exactly one region, and each region must contain exactly one clue (an X-like symbol that contains up to four numbers). For each clue, the number in the north part (north being towards the top of the page) indicates how many cells of that clue's region are located north of the clue cell (ignoring their east-west location). Analogously, numbers in the west, east, and south part indicate how many cells of that region are located west, east and south of the clue cell. If there is no number in a part, the number of cells in that direction are not given to you.

To indicate a solution, the solver must either draw connection lines indicating adjacent cells that are the same region (cyan lines in the example solution), or draw borders indicating adjacent cells that are not in the same region (black lines in the example solution), or a combination of both. A valid solution must indicate unambiguously which clue each cell belongs to.

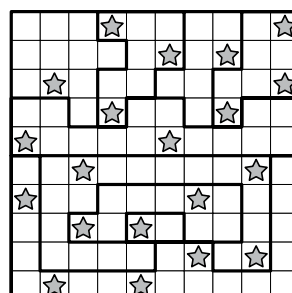
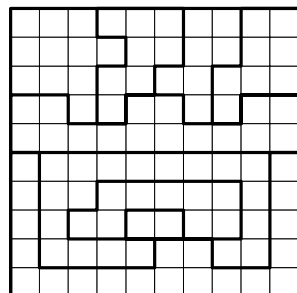
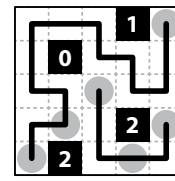
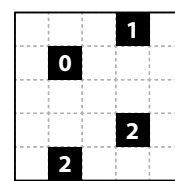
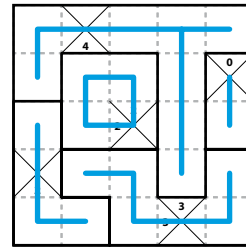
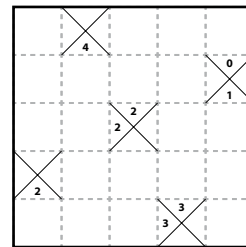
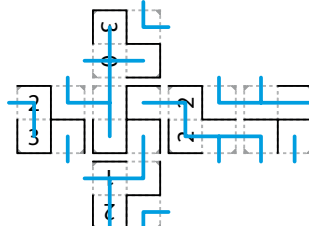
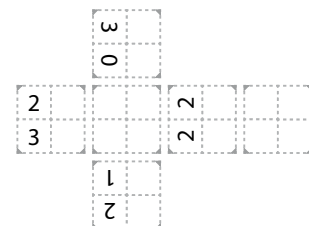
7. Takoyaki [5-Japan: Yohei Yanagawa] (48 points)

Locate some paths ("skewers") and circles ("takoyaki") in the grid. Paths must go through (only) white cells orthogonally, and do not overlap or intersect. Every white cell is used in exactly one path. Each path must use exactly three cells with circles. Both ends of each path must be in cells with circles. No two cells with circles can share an edge. If two circles are in the same row or column, they must be on different paths. A given number in a black cell indicates how many cells orthogonally adjacent to it have circles.

8. Star Battle (Different Neighbours) [6-Netherlands: Mark Sweep] (26 points)

Place stars into some cells in the grid, no more than one star per cell. Each row and each column must contain exactly the same number of stars; that number of stars is shown outside the upper-right of the grid. Cells with stars cannot touch each other along an edge or a corner.

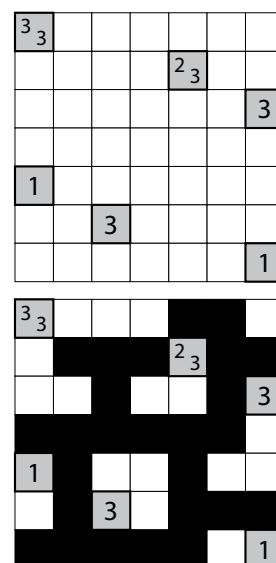
If two outlined regions share at least one cell edge in common, then the two regions must contain a different number of stars from each other. Each region must contain at least one star.



9. Island Pool [7-USA: Walker Anderson] (46 points)

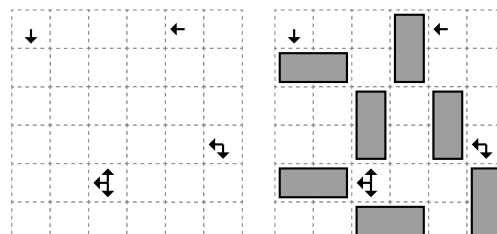
Shade some empty cells black (leaving the other cells white) so that the grid is divided into non-overlapping regions; cells of the same color are considered in the same region if they are adjacent along a cell edge. All black cells are in the same region. No 2x2 group of cells can be entirely shaded.

Some cells contain numbers; these cells cannot be shaded and are neither black nor white. The numbers in each such cell indicates the areas of all white regions that touch that cell at a cell corner or cell edge; and are given in *no particular order*. If multiple regions touching the cell have the same area, that number will appear more than once. If a region touches the cell at more than one location, that region will only be represented once. As a special case, if the number given in a cell is a zero (0), it means that all of the cells around the cell are shaded.



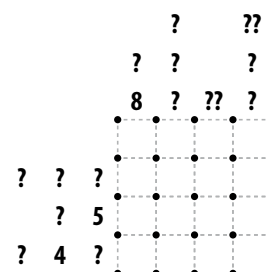
10. Nori Chain [8-India: Prasanna Seshadri] (26 points)

Shade some cells (leaving the other cells white) so that the grid is divided into non-overlapping regions; cells of the same color are considered in the same region if they are adjacent along edges. All shaded regions must have exactly 2 cells. All shaded regions are connected diagonally (touching at corners). Any cell with arrow(s) cannot be shaded. Arrows in a cell indicate *all* closest shaded cell(s) to that cell along the four orthogonal directions (if there are multiple cells of the same closest distance to the cell, there will be multiple arrows).

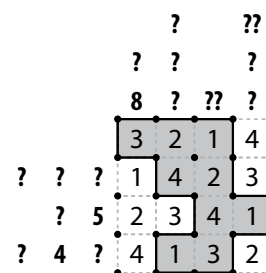


Backup 1. Times Out [1-Serbia: Cedomir Milanovic] (112 points)

Place a number from 1 to X into each cell so that each number appears exactly once in each row and column. (X is the number of cells in each row.) Also, draw a single, non-intersecting loop that only consists of line segments between the dots along the dashed lines.



Numbers outside the grid (when given) represent *all* contiguous groups of numbers along that row or column, in positional order. These groups are separated by cell edges that are part of the loop. A group inside the loop is represented by the sum of its numbers; a group outside the loop is represented by the product of its numbers. (A group with a single number is represented by the number itself.) Some digits may be replaced by a question mark (?); no number starts with the digit 0 (so, for example, '??' represents a number in the range 10 to 99).



Backup 2. Pentahex Barriers [2-Croatia: Siniša Hrga] (52 points)

Divide the grid into pentahexes such that every cell in the grid is part of exactly one pentahex. There cannot be more than one pentahex of the same shape (rotations and reflections of a pentahex count as the same shape) in the grid. Some rows (including diagonal rows) are labeled with a number; the number represents the number of edges in that row that separate two different pentahexes. Some of those edges may

