

Typed Logic LMI July 2020 Test by Puzzlers Club

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In the Pokémon main series, the many Pokémon species have one or two of 18 types. These 18 types serve as the theme of this test. There are 18 puzzles, one for each type, with a genre that is more or less themed on that type. You don't need to have any Pokémon knowledge for this test; the theme is purely aesthetics.

For each puzzle, you will be requested to enter an answer key. Solve the puzzle and follow the instructions to obtain the answer key from your solution. If an answer key asks you to include a two-digit number, only use the unit digit. For example, if an answer key asks you for lengths of loop segments in a row, and the lengths are 3, 10, 4, then enter 304.

Instant Grading is enabled; you will know if your answer is correct or not as soon as you submit it, and you may fix it if it's incorrect. Each incorrect answer reduces the value of the puzzle: the 1st, 2nd, 3rd, 4th mistakes on a puzzle reduce its value to 90%, 70%, 40%, 0% of the original value, respectively.

The test is worth **1000 points** and lasts for **90 minutes**. There is a bonus of **10 points per minute** if you finish the test early. Note that to obtain the bonus, you must finish all puzzles, even if some of them have reduced to no value.

While the type symbols are colored, none of the puzzles will require color; the puzzle booklet can be printed in grayscale.

| | | | | | |
|--|-----------------------|----|--|-----------------------|-----|
|  Normal | Sudoku | 50 |  Fire | Thermometers | 30 |
|  Fighting | Rock, Paper, Scissors | 30 |  Water | Aquarium | 30 |
|  Flying | Four Winds | 20 |  Grass | Tents | 20 |
|  Poison | Snake Pit | 60 |  Electric | Magnets | 150 |
|  Ground | Cave | 60 |  Psychic | Persistence of Memory | 50 |
|  Rock | Stostone | 50 |  Ice | Icebarn | 100 |
|  Bug | Fireflies | 40 |  Dragon | Castle Wall | 60 |
|  Ghost | Yajisan-Kazusan | 80 |  Dark | Light and Shadow | 50 |
|  Steel | Skyscrapers | 60 |  Fairy | Starry Night | 60 |

🎯 Normal: Sudoku

Put an integer between 1–9 inclusive (1–6 in the example) into each empty cell. Each row, column, and 3x3 box (2x3 in the example) contain each digit exactly once.

Answer key: Digits in marked lines.

For the example: A: 412356, B: 231564

★ 50pts 🖋️ Craig Kasper

| | | | | | |
|----|---|---|---|---|---|
| 1 | 2 | | | | |
| | | 3 | 4 | | |
| ▶A | | | | 5 | 6 |
| | 3 | 5 | | | |
| ▶B | | 1 | 5 | | |
| | | | | 1 | 3 |

| | | | | | | |
|----|---|---|---|---|---|---|
| 1 | 2 | 4 | 6 | 3 | 5 | |
| 5 | 6 | 3 | 4 | 2 | 1 | |
| ▶A | 4 | 1 | 2 | 3 | 5 | 6 |
| | 3 | 5 | 6 | 1 | 4 | 2 |
| ▶B | 2 | 3 | 1 | 5 | 6 | 4 |
| | 6 | 4 | 5 | 2 | 1 | 3 |

👊 Fighting: Rock, Paper, Scissors

Divide the grid into regions following the dashed borders. Each region contains exactly 1 "winning symbol", as well as 2 or more "losing symbols". In the given triangle, a symbol is winning over the symbol it points to: rock (R circle) wins against scissors (S triangle), scissors wins against paper (P square), and paper wins against rock.

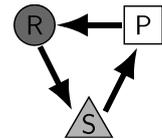
Answer key: Lengths of contiguous cells in marked lines, separated by region boundaries.

For the example: A: 21111, B: 121

★ 30pts 🖋️ IHNN

| | | | | | | |
|----|----|---|---|---|---|---|
| | ▶B | | | | | |
| | ⬇ | | | | | |
| ▶A | R | R | P | P | S | S |
| | P | S | S | R | R | P |
| | S | R | P | P | S | R |
| | S | R | S | R | S | R |

| | | | | | | |
|----|----|---|---|---|---|---|
| | ▶B | | | | | |
| | ⬇ | | | | | |
| ▶A | R | R | P | P | S | S |
| | P | S | S | R | R | P |
| | S | R | P | P | S | R |
| | S | R | S | R | S | R |



🌀 Flying: Four Winds

Draw arrows extending from the given numbers and going in the four cardinal directions. Each empty cell is covered by some arrow, and no two arrows intersect. The total lengths of the arrows extending from a number is equal to the number.

Answer key: For each cell with a circle from left to right, number connected to the arrow covering the cell.

For the example: 234344

★ 20pts 🖋️ Craig Kasper

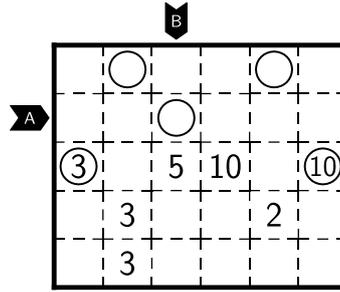
| | | | | | |
|---|---|---|---|---|---|
| 0 | | 3 | | | |
| | 4 | ● | | 1 | ● |
| 3 | ● | | 0 | | |
| | | 0 | | ● | 4 |
| ● | 2 | | ● | 3 | |
| | | | 4 | | 0 |

| | | | | | |
|---|---|---|---|---|---|
| 0 | ↑ | 3 | → | → | → |
| ← | 4 | → | → | 1 | ↑ |
| 3 | → | → | 0 | ↓ | ↑ |
| ↓ | ↑ | 0 | ← | → | 4 |
| ← | 2 | ← | → | 3 | → |
| ← | ← | ← | 4 | → | 0 |

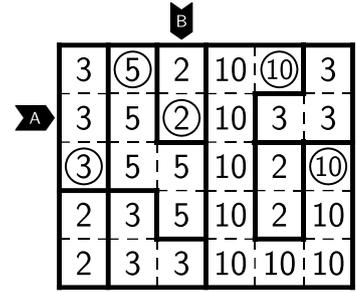


🧠 Poison: Snake Pit

Divide the grid into regions following the dashed borders. Each region is a snake: a path of at least 2 cells long that does not touch itself, not even diagonally. Each number belongs in a region of that area. No two regions of the same area share a side. Each circle is the end of a snake.



★ 60pts 🖋️ IHNN

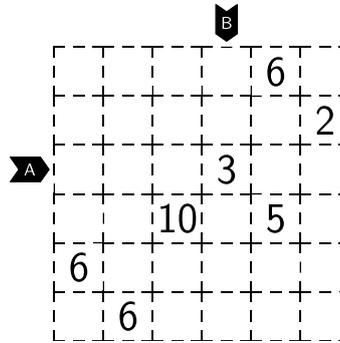


Answer key: Lengths of contiguous cells in marked lines, separated by region boundaries.

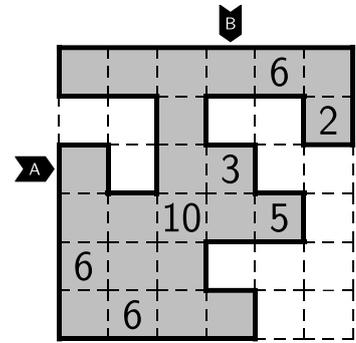
For the example: A: 11112, B: 221

🏠 Ground: Cave

Draw a loop along the dashed borders. The loop may not touch or cross itself. All numbers are inside the loop. Each number sees that many cells, where two cells see each other if they are both inside the loop, they are in the same row/column, and there is no loop segment between them. A cell sees and therefore counts itself.



★ 60pts 🖋️ IHNN

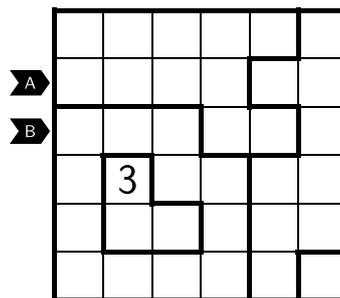


Answer key: Lengths of contiguous cells in marked lines, separated by the loop.

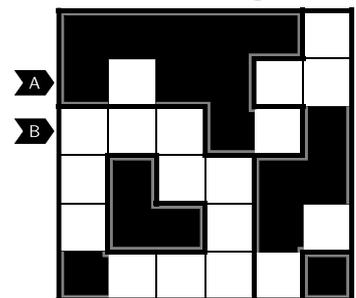
For the example: A: 1122, B: 11211

🪨 Rock: Stostone

Shade some cells black. A contiguous block of black cells is called a stone. Each stone is contained in exactly one region. Each region contains exactly one stone. Each number indicates the area of the stone in the region. (A region without number can have a stone of any area, but at least 1 cell.) No two stones share a side. If the stones are dropped by gravity, they fill exactly the bottom half of the grid; see example to the right.



★ 50pts 🖋️ Jamie Hargrove



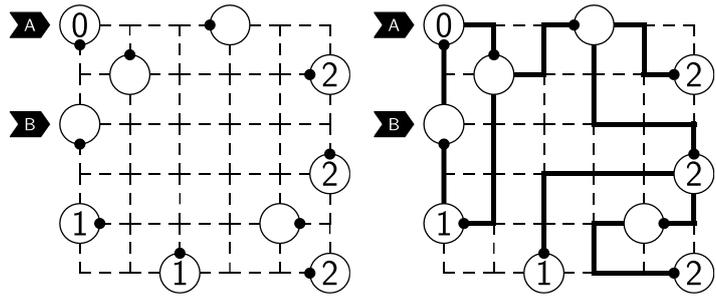
Answer key: Lengths of contiguous cells of the same color in marked lines.

For the example: A: 1122, B: 3111

🐛 Bug: Fireflies

★ 40pts ✍️ wormsofcan

Draw a path from each circle. Each path starts from the black dot of a circle, follows the dashed borders, and ends on a circle. No path touches or crosses itself. No two paths touch or cross. All circles are connected in a network by the paths. Each number tells the number of turns made by the path starting from that circle. (A circle with no number can have any number of turns.)



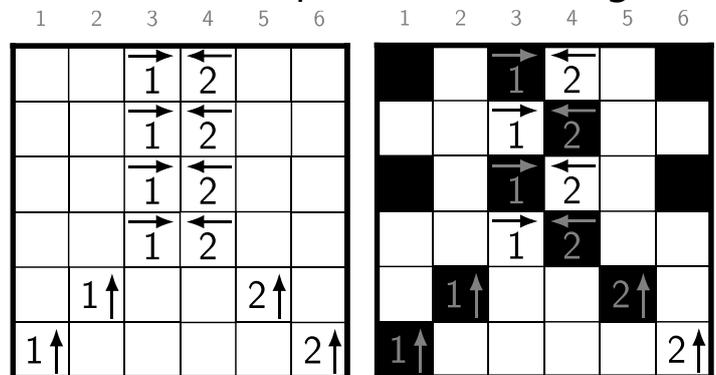
Answer key: Lengths of horizontal path segments in marked rows; 0 if there is no horizontal path segment. Circles separate paths.

For the example: A: 111, B: 2

👻 Ghost: Yajisan-Kazusan

★ 80pts ✍️ Jamie Hargrove

Shade some cells black. No two black cells share a side. All white cells form a single contiguous region. Each unshaded clue tells the number of black cells in the indicated direction. (A shaded clue is ignored and may or may not be true.)



The gray numbers above the grid are for answer key. They are not part of the puzzle.

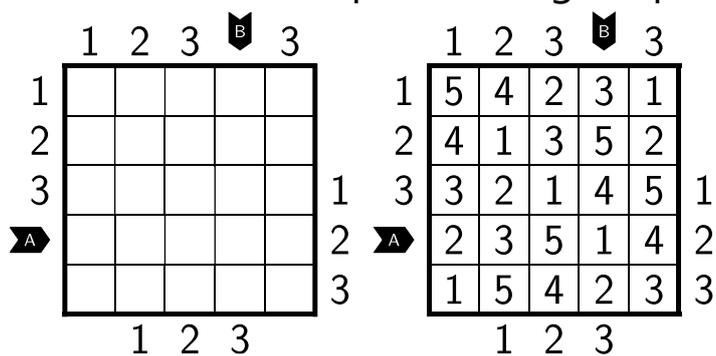
Answer key: From top to bottom, column label of leftmost black cell; 0 if there is no black cell.

For the example: 141421

🏗️ Steel: Skyscrapers

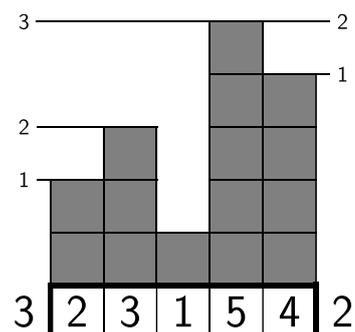
★ 60pts ✍️ Craig Kasper

Put an integer between 1–7 inclusive (1–5 in the example) into each empty cell. Each row and column contain each number exactly once. Treating numbers in the grid as skyscrapers of that height, each number outside the grid gives the number of skyscrapers seen when looking into the grid from that direction. Taller skyscrapers hide shorter ones; see example to the right.



Answer key: Digits in marked lines.

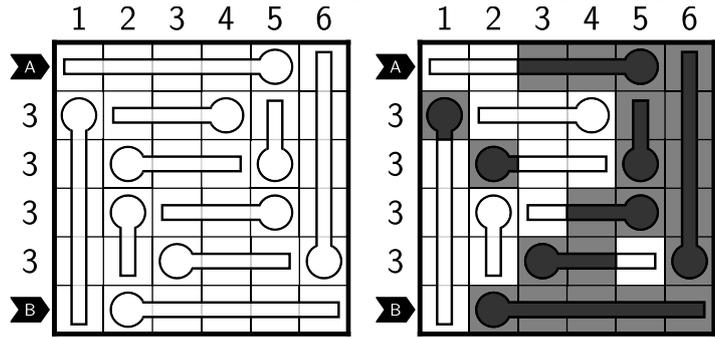
For the example: A: 23514, B: 35412



🔥 Fire: Thermometers

Fill each thermometer by an amount of mercury: none, partially, or fully. Each thermometer is filled from the rounded end towards the other end. The amount of mercury in each thermometer is aligned to the grid. Each number outside the grid tells the number of cells containing mercury in the row/column.

★ 30pts ✎ Craig Kasper



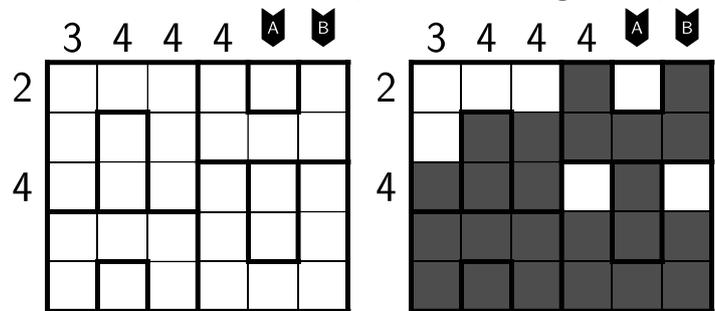
Answer key: Lengths of contiguous cells, either all containing mercury or all empty, in marked lines.

For the example: A: 24, B: 15

💧 Water: Aquarium

Mark some cells as water and leave the rest empty. Water is affected by gravity: if an empty cell and a water cell share a side, either the empty cell is above the water cell, or there is a thick border between them. A contiguous block of water, separated by the thick borders, is called a body of water. Each body of water has the same surface level everywhere; see bottom right region. (There can be multiple bodies of water in a single region; see top left region.) Each number tells the number of water cells in the row/column.

★ 30pts ✎ Craig Kasper



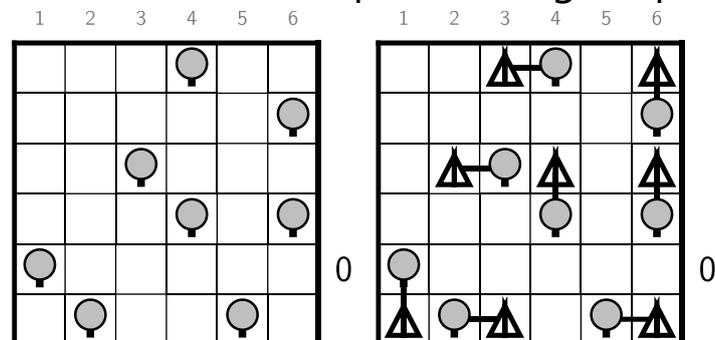
Answer key: Lengths of contiguous cells, either all containing water or all empty, in marked lines.

For the example: A: 14, 212

🌿 Grass: Tents

Place some tents on empty cells of the grid. Each tent is anchored to an adjacent tree. Each tree is the anchor of exactly one tent. No two tents touch, even diagonally. Each number tells the number of tents in the row/column.

★ 20pts ✎ Craig Kasper



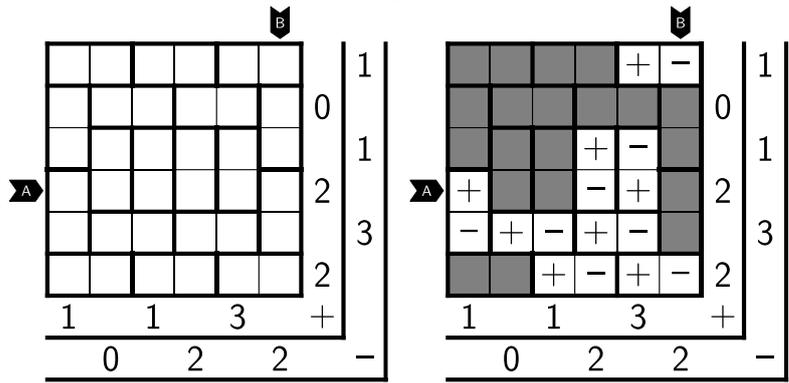
The gray numbers above the grid are for answer key. They are not part of the puzzle.

Answer key: From top to bottom, column label of leftmost tent; 0 if there is no tent.

For the example: 302001

⚡ Electric: Magnets

Place some magnets on marked dominoes of the grid and leave the rest empty. Each magnet has a positive half (+) and a negative half (-). Two same-charged halves (both positive or both negative) do not share a side. Each number outside the grid indicates the number of the appropriate magnet halves in the row/column.



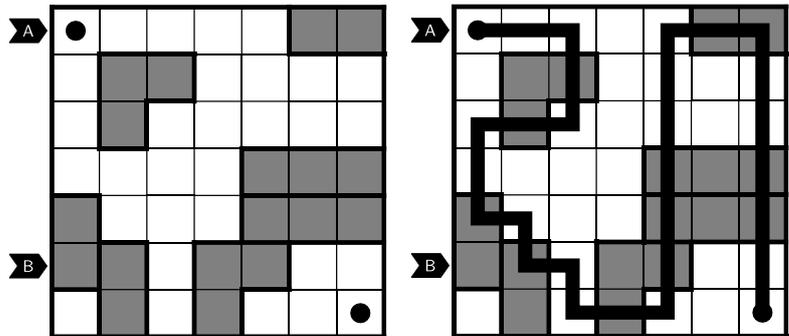
★ 150pts ManyPinkHats

Answer key: Contents of marked lines: + for positive half, - for negative half, X for empty. Alternately use P for positive half, N for negative half, X for empty.

For the example: A: +XX-+X, B: -XXXX-; alternately A: PXXNPX, B: NXXXXN

🌀 Psychic: Persistence of Memory

Draw a snake of width 1 cell connecting the two dots, connecting centers of cells and going horizontally and vertically. The snake does not touch itself even diagonally. The snake visits all marked regions. If two marked regions have the same shape and orientation, the paths made by the snake in them are identical.



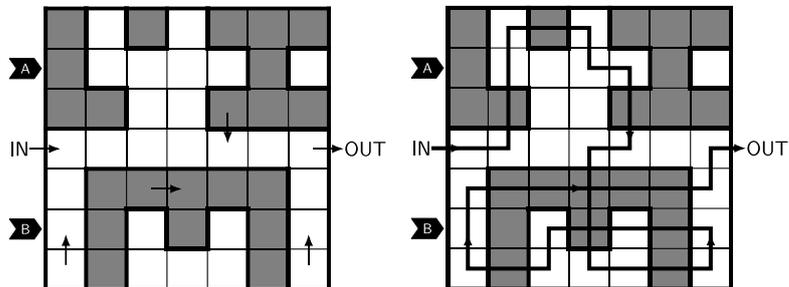
★ 50pts boboquack

Answer key: Lengths of horizontal snake segments in the marked rows; 0 if there is no horizontal snake segment.

For the example: A: 22, B: 1

❄️ Ice: Icebarn

Draw a path from the start ("IN") to the goal ("OUT"), connecting centers of cells and going horizontally and vertically. The path passes through all arrows in the indicated directions. Each marked region is a patch of ice. The path passes each patch of ice at least once. The path goes straight when on ice. It may cross itself, but only on ice.



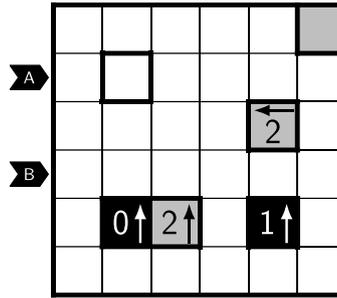
★ 100pts lovemathboy

Answer key: Lengths of horizontal path segments in the marked rows; 0 if there is no horizontal path segment.

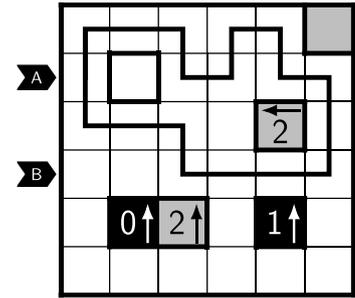
For the example: A: 1, B: 4

Dragon: Castle Wall

Draw a loop connecting centers of cells and going horizontally and vertically. The loop may not touch or cross itself. The loop does not visit the clue squares, marked with thick borders. Black squares are outside the loop. White squares are inside the loop. (Gray squares can be either outside or inside the loop.) Each clue tells the ^{total sum of lengths} number of loop segments in that direction up until the edge of the grid.



★ 60pts IHNN



Answer key: Lengths of horizontal loop segments in the marked rows; 0 if there is no horizontal loop segment.

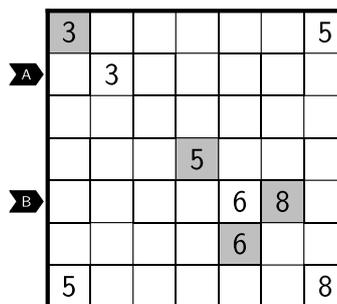
For the example: A: 11, B: 3

Dark: Light and Shadow

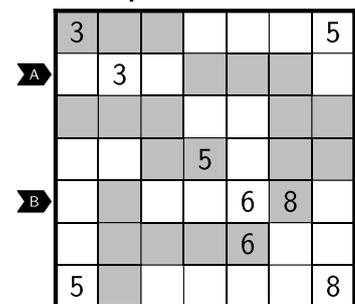
Shade some empty cells of the grid. Each contiguous region of cells of the same color contains exactly one number, which tells its area.

Answer key: Lengths of contiguous cells of the same color.

For the example: A: 331, B: 11311

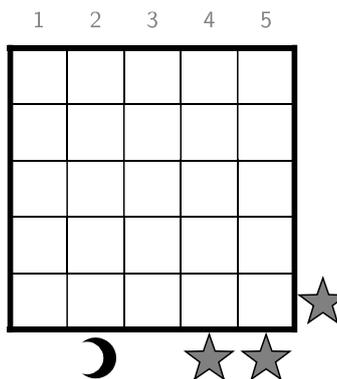


★ 50pts IHNN

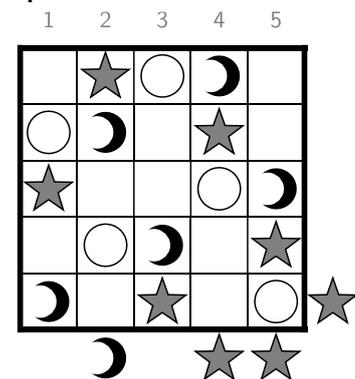


Fairy: Starry Night

Place a star (★), a sun (☉), and a moon (☾) in some cells. Each row/column contains each symbol exactly once. No two identical symbols touch, even diagonally. A symbol outside the grid indicates which of the sun and the moon is closer to the star: a sun or a moon to indicate that symbol is closer to the star than the other symbol, or a star if both symbols are equally distant.



★ 60pts chaotic_iak



The gray numbers above the grid are for answer key. They are not part of the puzzle.

Answer key: From top to bottom, column numbers for stars, then suns.

For the example: Stars: 24153, Suns: 31425