puzzle Ramayan

and

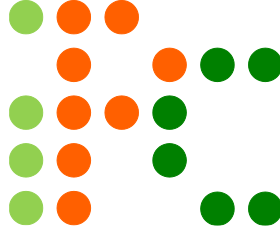**Episode – 5**
3rd – 9th May 2024

Shading & Regions
by
Priyam Bhushan & Prasanna Seshadri

Puzzle Ramayan rounds will also serve as qualifiers for Indian Puzzle Championship for year 2024. Please check http://logicmastersindia.com/PR/2023pr.asp **for details.**

About this Episode

This episode has 22 Puzzles from the following puzzle types:

- 3* Nanro
- 3* LITS
- 3* Cave
- 2* Cave [LITSO]
- 3* Spiral Galaxies
- 3* Five Cells
- 3* Sashigane
- 2* Five Cells [Symmetry]

How to participate?

- Understand the rules of different puzzles that will appear in this episode. This Instruction Booklet has rules for each puzzle.
- Any time on or after 3rd May (but on or before 9th May), login at the submission page using your LMI user-id and password. Please check the submission page for exact timing.
- **If you plan to solve on paper:**
    a) Download the password protected Puzzle booklet (will be uploaded before the test starts). The Puzzle booklet contains the actual Puzzles to be solved. It is password protected, so you won't be able to open it.
    b) Click on "Start". At this time, password for pdf will be shown and timer will start. **The contest duration is 60 minutes.**
    c) The puzzle booklet can be downloaded, printed and solved on paper.
    d) We advise you to have a printer accessible with enough paper.
    e) You are allowed to use writing implements, eraser, blank paper (including commercial graph paper), ruler, scissors, and tape.
- **If you plan to solve on LMI's Penpa-Integrated Interface:**
    a) Click on this link and understand the instructions - https://logicmastersindia.com/live/faq-online-solving.asp
    b) It is noted on the link too, but we note it here as well to be clear – the participants must still input the answer keys in the boxes below the puzzle and submit them to receive credit as given below.
- Outside solving help of any kind is not permitted. This includes but is not limited to: assistance of any kind from any other person; prepared notes, books, calculators, computers, or tools other than items explicitly permitted.
- Participants may use both paper solving and online solving, even interchangeably. Eventually our system will only count anything submitted in the submission boxes in either mode.

If you are participating at LMI for first time, it will be useful to check the F.A.Q. at http://logicmastersindia.com/t/?tid=2773.

About answer keys and Submission

- Each puzzle has some answer keys, as described in the instructions.
- After solving the puzzle, you need to submit the puzzle using the answer keys.
- You may submit the answer keys anytime during the test duration. You may consider submitting a puzzle as soon as you solve it.
- Answer keys are always to be entered from left to right or top to bottom
- Don't enter any separator unless specified in the answer key
- If one row and one column is marked, enter the row first and then the column
- If multiple rows are marked, enter from top to bottom for marked rows

- If multiple columns are marked, enter from left to right for marked columns
- Uppercase or lower case does not matter for answer keys where letters must be entered.
- Characters other than the ones explicitly expected by the answer key will cause the red highlight to appear around the submission box.

Points Table and Scoring

Points typically indicate difficulty of the Puzzles and time required to solve them. You will get full points if you enter the correct answer key. While the organizers have made best efforts to match them, **your personal experience and preference may differ.**

Nanro	3, 2, 7
LITS	2, 3, 3
Cave	4, 4, 3
Cave [LITSO]	4, 6
Spiral Galaxies	2, 6, 7
Five Cells	1, 8, 12
Sashigane	5, 4, 3
Five Cells [Symmetry]	5, 6

This test uses instant grading where a solver can submit any individual Puzzle and receive confirmation that the solution is correct or not. Each incorrect submission reduces the puzzle's potential score. The first, second, third, and fourth incorrect submissions reduce the potential score to 90%, 70%, 40%, and 0% respectively. A demonstration for this is shown below.

Original points

04 Araf	50 points	4A	Sum should be 10

Potential points after 1 incorrect submission

04 Araf	45 / 50	4A	1234

Potential points after 2 incorrect submissions

04 Araf	35 / 50	4A	23311

Potential points after 3 incorrect submissions

04 Araf	20 / 50	4A	1111111111

Potential points after 4 incorrect submissions

04 Araf	0 / 50	4A	541

Bonus and Ranking

If you submitted all Puzzles correctly, you can have bonus points of 1 point per minute saved, computed up to seconds.

Ranking will be based on following rules in order:
1. Most total points
2. Earliest final submission time, up to seconds (ignoring incorrect submissions)

Credits
- **Botaku & Wessel Strijkstra** for test solving the puzzles and providing invaluable feedback.
- The original creator **opt-pan** for penpa edit - https://opt-pan.github.io/penpa-edit/
- **Swaroop Guggilam** for his recent efforts in adding features to Penpa-edit - https://swaroopg92.github.io/penpa-edit/ and also working to integrate it with our contest engine.

About the Puzzle Booklet
The password protected Puzzle booklet will have 8 pages. This is relevant only for paper solvers.
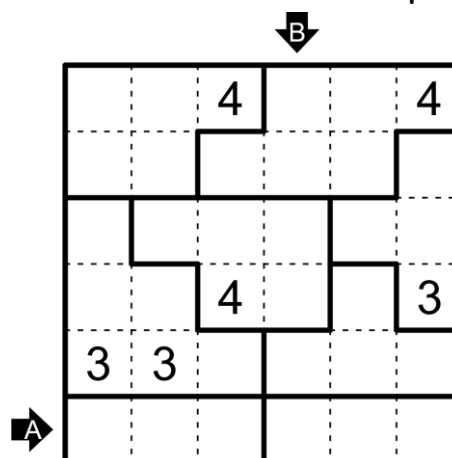
1-3 Nanro

3 + 2 + 7 points

Label some cells with numbers to form a single connected group of labeled cells; no 2×2 group of cells may be fully labeled. Each bold region must contain at least one labeled cell. Each number (including any given numbers) must equal the total count of labeled cells in that region. Two cells labeled by the same number may not share a region border.

[The puzzles in the contest will be of sizes 8x8, 7x7 and 10x10. This example is 6x6.]

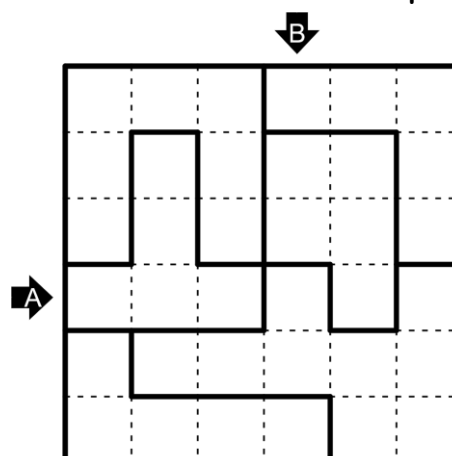Penpa for example: https://tinyurl.com/yrath4a8

4-6 LITS

2 + 3 + 3 points

Shade one tetromino of cells in each region so that all shaded cells form one orthogonally connected area. Two tetrominoes of the same shape may not touch orthogonally, counting rotations and reflections as the same. No 2x2 region may be entirely shaded.

[The puzzles in the contest will be of sizes 9x9, 10x10 and 10x10. This example is 6x6.]

Penpa for example: https://tinyurl.com/ytm65shu

7-9 Cave

4 + 4 + 3 points
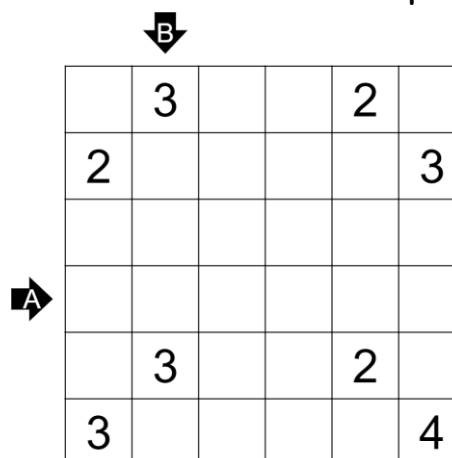
Shade some cells so that the shaded cells are all connected orthogonally by other shaded cells to the edge of the grid, and the remaining unshaded cells form one orthogonally connected area. Clues cannot be shaded, and represent the total number of unshaded cells that can be seen in a straight line vertically or horizontally, including itself. **A '?' stands for any positive number.**

[The puzzles in the contest will be of sizes 8x8, 9x9 and 10x10 respectively. This example is 6x6.]

Penpa for example: https://tinyurl.com/2edjtv2a

puzzle ramayan   **Shading & Regions 2024**
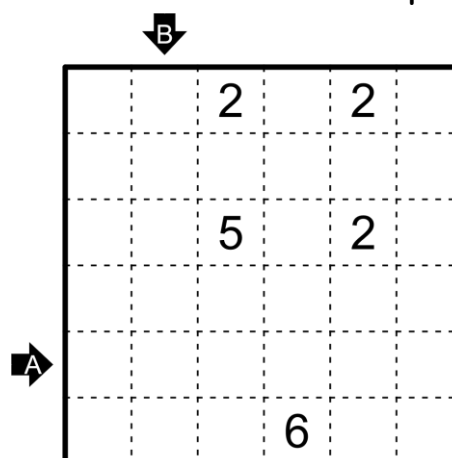
10-11 Cave [LITSO]

4 + 6 points

Apply Cave rules.

The shaded (non-cave) cell groups must also be able to be divided into tetrominoes such that no two tetrominoes of the same shape share an edge, counting rotations and reflections as the same.

[The puzzles in the contest will be of sizes 8x8 and 10x10. This example is 6x6.]

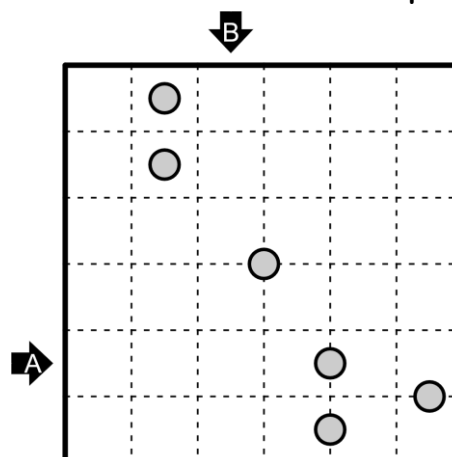**Penpa for example: https://tinyurl.com/yrwfkh8z**

12-14 Spiral Galaxies

2 + 6 + 7 points

Divide the grid along the indicated lines into connected regions – "galaxies" – with rotational symmetry. Each cell must belong to one galaxy, and each galaxy must have exactly one circle at its center of rotational symmetry.

[The puzzles in the contest will be of sizes 7x7, 10x10 and 10x10. This example is 6x6.]

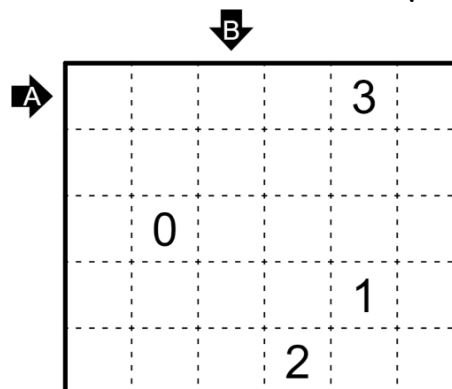**Penpa for example: https://tinyurl.com/ywzodzxx**

15-17 Five Cells

1 + 8 + 12 points

Divide the grid into regions of five orthogonally connected cells. Clues represent the number of edges drawn surrounding the clue (up to four).

[The puzzles in the contest will be of sizes 5x8, 10x7 and 10x10 respectively. This example is 5x6.]
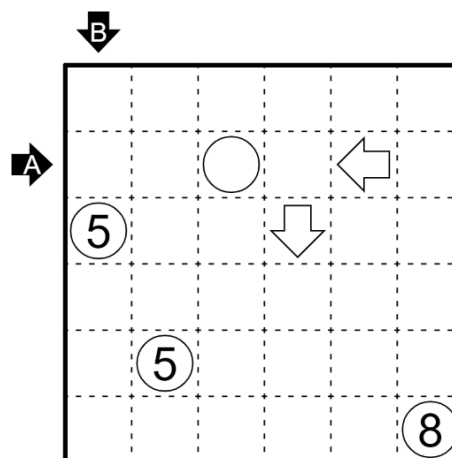
Penpa for example: https://tinyurl.com/ycmn8kdc

18-20 Sashigane

Divide the grid into regions of orthogonally connected cells. Each region must be an L shape with a width of one cell. Arrows must lie at one end of an L and point toward the bend. Circles must lie at the bend of an L, and if one contains a number, the L it's inside must contain the indicated number of cells.

[The puzzles in the contest will be of sizes 8x8, 9x9 and 10x10. This example is 6x6.]

Penpa for example: https://tinyurl.com/y9u2udn3

21-22 Five Cells [Symmetry]
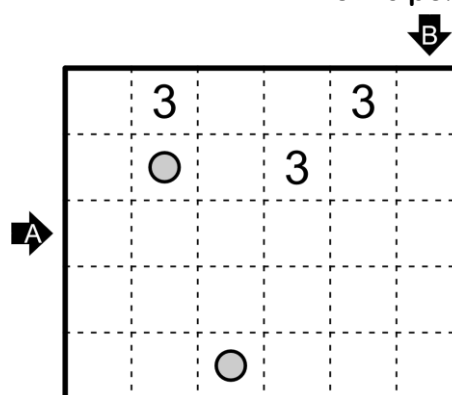
Apply Five Cells rules.

Each region that is rotationally symmetric must have one circle at its center. **Other regions cannot contain circles.**

[The puzzles in the contest will be of sizes 7x10 and 10x10. This example is 5x6.]

Penpa for example: https://tinyurl.com/2x2gbrtj

Solutions

For this round, all answer keys will NOT be the same for all puzzles.

The keys are given section by section.

Nanro, LITS, Cave, Cave [LITSO] – For each marked row/column, enter the number of consecutive shaded and unshaded cells in the direction of the arrow. Use unit's digit for double digit values.

Spiral Galaxies, Five Cells, Sashigane, Five Cells [Symmetry] – For each marked row/column, enter the number of consecutive cells belonging to separate regions in the direction of the arrow. Use unit's digit for double digit values.

Nanro

Key: 15, 1113

LITS

Key: 3111, 12111

Cave

Key: 1113, 1311

Cave [LITSO]

Key: 2211, 321

Spiral Galaxies

Key: 321, 114

Five Cells

Key: 411, 1112

Sashigane

Key: 1221, 231

Five Cells [Symmetry]

Key: 2121, 23