puzzle
ramayan

and

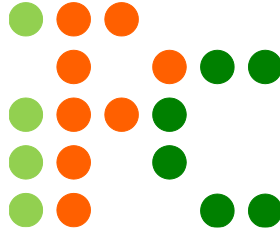**Episode – 6**
31ˢᵗ May – 4ᵗʰ June 2019

Number and Object Placement
by
Harmeet Singh and Prasanna Seshadri

Puzzle Ramayan rounds will also serve as qualifiers for Indian Puzzle Championship for year 2019. Please check http://logicmastersindia.com/PR/2019pr.asp **for details.**

About this Episode

This episode has 22 Puzzles from the following puzzle types:

- 3* Kropki
- 3* Skyscrapers
- 3* Tomtom
- 2* Kropki-Skyscrapers
- 3* Star Battle
- 3* Battleships
- 3* Tetrominoes and Pentominoes
- 2* Star Battle – Small Regions

How to participate?

- Understand the rules of different puzzles that will appear in this episode. This Instruction Booklet has rules for each puzzle.
- 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.
- Any time on or after 31st May (but on or before 4th June), login at the submission page using your LMI userid and password. Please check the submission page for exact timing.
- Click on "Start". At this time, password for pdf will be shown and timer will start.
- The puzzle booklet should be downloaded, printed and solved on paper.
- There will not be any interface / applet to solve the puzzles on web browser.
- Most of the puzzles are designed to be solved faster on paper.
- We advise you to have a printer accessible with enough paper.
- 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.
- You are allowed to use writing implements, eraser, blank paper (including commercial graph paper), ruler, scissors, and tape.

If you are participating at LMI for first time, you must check the F.A.Q. at
http://logicmastersindia.com/t/?tid=381.

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
- If horizontal and vertical keys are needed, first enter the horizontal and then the vertical
- Uppercase or lower case of answer key does not matter
- Characters other than alphabets, numbers and comma will be removed while checking the answer

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.

Kropki	1, 4, 5
Skyscrapers	2, 8, 5
Tomtom	4, 8, 11
Kropki-Skyscrapers	3, 4
Star Battle	3, 6, 5
Battleships	1, 5, 5
Tetrominoes and Pentominoes	2, 3, 11
Star Battle - Small Regions	2, 2

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.

Bonus and Ranking

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

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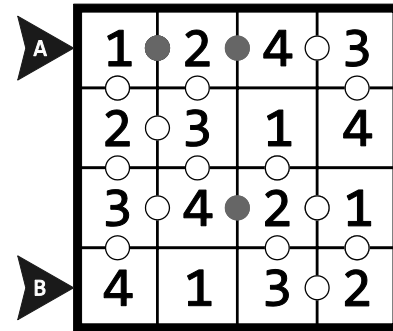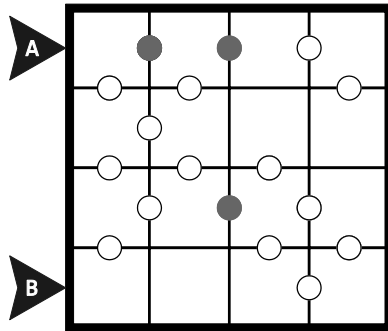2. Earliest final submission time, up to seconds (ignoring incorrect submissions)

About the Puzzle Booklet

The password protected Puzzle booklet will have about 10 pages. We expect you to print and solve on paper, so you would need to have a printer accessible with enough paper.

1-3 Kropki

1 + 4 + 5 points

Fill in the grid with digits 1–N where N is the size of the grid. Each row and column contains each digit exactly once. If two consecutive digits appear in two neighbouring cells, they are separated by a white dot. If the digit in a cell is half of the digit in a neighbouring cell, then they are separated by a black dot. The dot between 1 and 2 can either be white or black. All possible dots are marked.
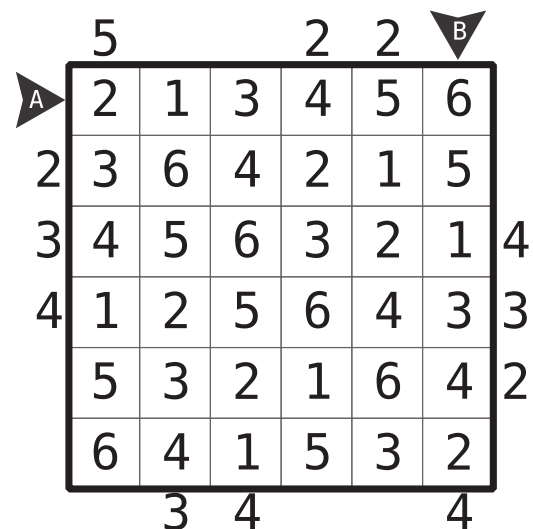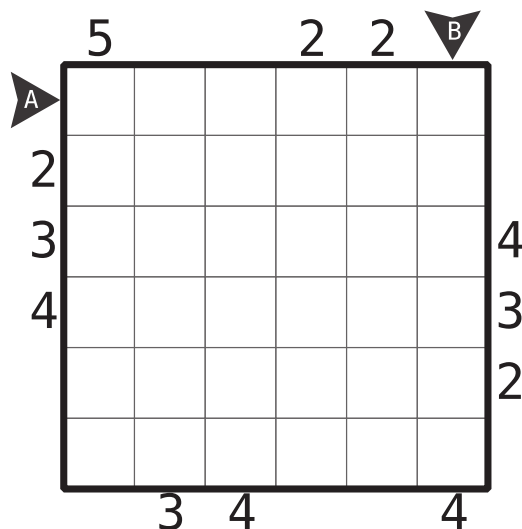
Answer Key: For each marked row (or column), enter the contents of the row (or column) from left to right (or top to bottom).

Example: 1243,4132

4-6 Skyscrapers

2 + 8 + 5 points

Fill in the grid with digits 1–N where N is the size of the grid. Each row and column contains each digit exactly once. Each number inside the grid represents the height of a building. The clues outside of the grid indicate how many buildings can be seen when looking from that direction. Taller buildings block the view of smaller buildings.

Answer Key: For each marked row (or column), enter the contents of the row (or column) from left to right (or top to bottom).
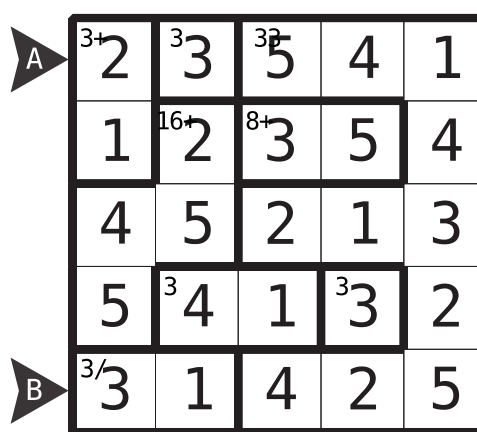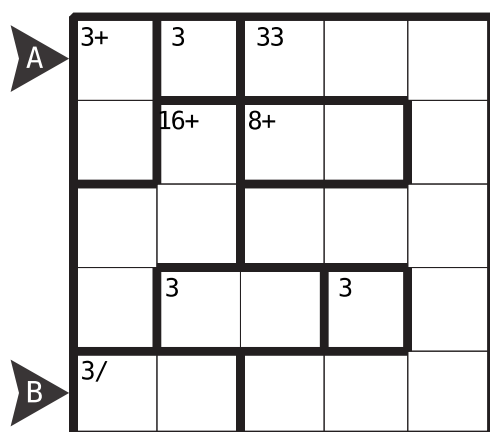
Example: 213456, 651342

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puzzle ramayan   **Number and Object Placement**

7-9 Tomtom

4 + 8 + 11 points

Fill in the grid with digits 1–N where N is the size of the grid. Each row and column contains each digit exactly once. Numbers may repeat within an outlined region. The number in the upper-left corner of each outlined region indicates the result when one of the four basic operations is applied to all numbers in the region, starting with the largest number for subtraction and division (e.g., 1, 2, 4 with division has a clue of 2/ as 4/2/1=2). The operation may or may not be given in the region, but at least one of the four operations must apply.

The symbols used for the basic arithmetic operations are as below:

+	Addition
–	Subtraction
x	Multiplication
/	Division

Answer key: For each marked row (or column), enter the contents of the row (or column) from left to right (or top to bottom).
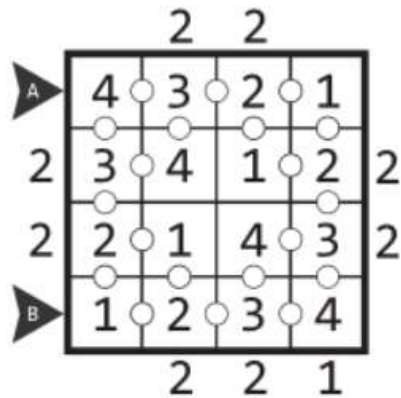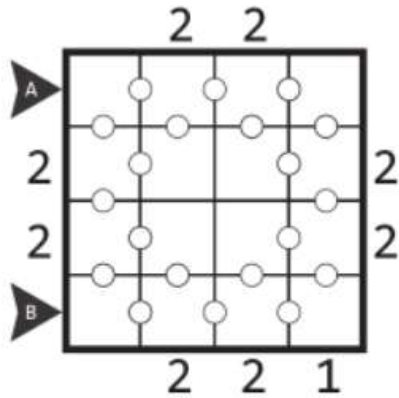
Example: 23541,31425

10-11 Kropki-Skyscrapers

3 + 4 points

Fill in the grid with digits 1–N where N is the size of the grid. Each row and column contains each digit exactly once.

Kropki rules: If two consecutive digits appear in two neighbouring cells, they are separated by a white dot. If the digit in a cell is half of the digit in a neighbouring cell, then they are separated by a black dot. The dot between 1 and 2 can either be white or black. All possible dots are marked.

Skyscraper rules: Each number inside the grid represents the height of a building. The clues outside of the grid indicate how many buildings can be seen when looking from that direction. Taller buildings block the view of smaller buildings.
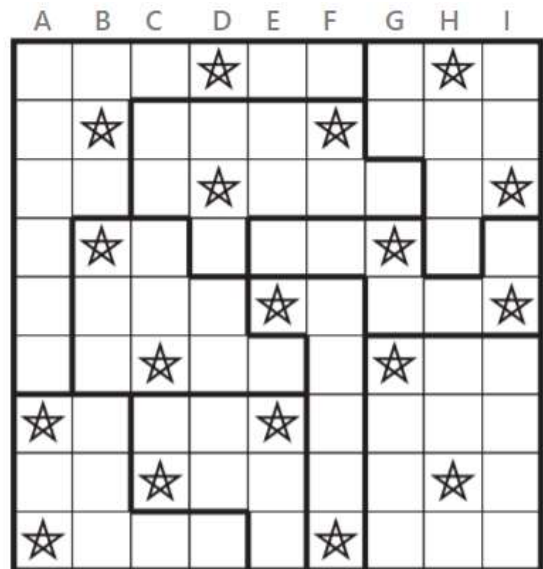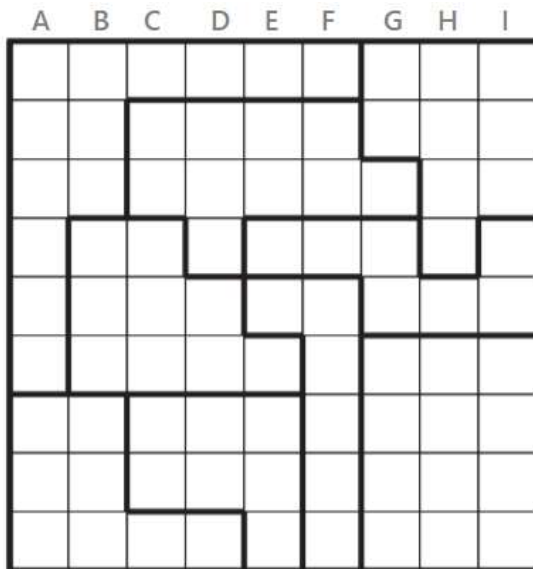
Answer key: For each marked row (or column), enter the contents of the row (or column) from left to right (or top to bottom).

Example: 4321, 1234

12-14 Star Battle

3 + 6 + 5 points

Place some stars in the grid so that each row, each column and each outlined region contains exactly two stars. Stars do not touch each other, not even diagonally.

Answer Key: For each row from top to bottom, enter the column position of first star.

Example: DBDBECACA

15-17 Battleships

1 + 5 + 5 points

Place the given fleet of ships with the shapes of the ships as shown. The numbers outside the grid indicate the number of cells occupied by ships in that row or column. Ships cannot touch each other, not even diagonally. Some cells are known to be water and are indicated by waves.

Answer: For each row from top to bottom, enter the column position of first ship segment. Enter "-" if there are no ships in the row.

Answer: AEC-EAEA

18-20 Tetrominoes and Pentominoes

2 + 3 + 11 points

Place the given set of polyominos in the grid. Polyominos do not touch each other, not even diagonally. Rotations and reflections are allowed. Polyominos cannot be placed in shaded cells. The numbers outside the grid indicate the number of cells occupied by polyominos in that row or column.

Answer Key: For each marked row/column, enter the letters corresponding to all polyominos seen from the marked directions. (– if no polyominos are seen)

Example: I, LS, TO

21-22 Star Battle – Small Regions

2 + 2 points

Place some stars in the grid so that each row and each column contains exactly two stars. Each outlined region contains exactly one star. Stars do not touch each other, not even diagonally.

Answer Key: For each row from top to bottom, enter the column position of first star.

Example: EAHBDBDACE