puzzle
ramayan

and

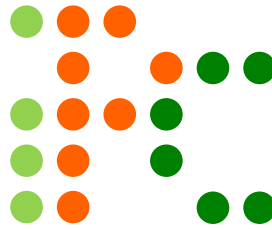**Episode – 3**
5th – 10th March 2021

Number Placement
by
Rakesh Rai

Puzzle Ramayan rounds will also serve as qualifiers for Indian Puzzle Championship for year 2021. Please check http://logicmastersindia.com/PR/2021pr.asp **for details.**

About this Episode

This episode has 22 Puzzles from the following puzzle types:

- 3* Skyscrapers
- 3* Easy as 123
- 3* TomTom
- 3* Top Heavy
- 3* Nanro Signpost
- 3* Magic Summer
- 2* Skyscrapers Easy As 123
- 2* Top Heavy TomTom

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 5th March (but on or before 10th March), login at the submission page using your LMI user-id 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 contest duration is 90 minutes.**
- The puzzle booklet can be downloaded, printed and solved on paper.
- There will not be any interface / applet to solve the puzzles on web browser, but external Penpa links will be provided. The participant is still expected to come back and enter the answer key if solving using the links.
- 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=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
- 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 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.

Skyscrapers	2, 2, 5
Easy as 123	2, 2, 3
TomTom	2, 2, 3
Top Heavy	2, 3, 12
Nanro Signpost	1, 2, 7
Magic Summer	1, 8, 16
Skyscrapers Easy As 123	4, 5
Top Heavy TomTom	6, 10

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 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)

Penpa Usage

This contest will also be solvable on the Penpa-Edit software. Below the rules of each puzzle will be a link to click to solve on the editor. The editor DOES NOT have a solution enabled so it will not check a solution. Participants must submit the answer key codes as they would with paper solving. It is therefore advisable to enter solution codes one at a time.
To practice on the editor, we have given links for solving the example puzzles too.

Credits
- **Yosh (rand_yosh314)** 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/

About the Puzzle Booklet

The password protected Puzzle booklet will have 8 pages. We expect you to print and solve on paper, so you would need to have a printer accessible with enough paper.
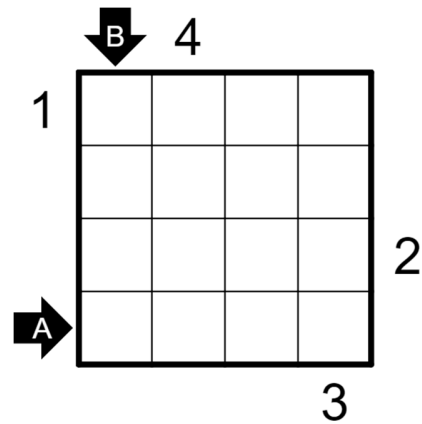
1-3 Skyscrapers

2 + 2 + 5 points

Place a digit from 1 to N into each cell in the N by N grid so that no digit repeats in any row or column. Also, each number in the grid represents the height of a building and the clues outside the grid indicate how many buildings can be "seen" when looking from that direction. Taller buildings block the view of smaller buildings.

[The puzzles in the contest will be of sizes 5x5, 6x6 and 6x6. This example is 4x4.]

Penpa for example: https://git.io/JqeFx

4-6 Easy as 123

2 + 2 + 3 points

(1~3)

Place a digit from the given range into some cells in the grid so that no digit repeats in any row or column, and all digits within the range appear exactly once in each row and column. Some cells remain blank. The clues outside the grid indicate the first digit from that direction along the row or column.

[The puzzles in the contest will be of sizes 5x5, 6x6 and 6x6. This example is 4x4.]

Penpa for example: https://git.io/JqebC
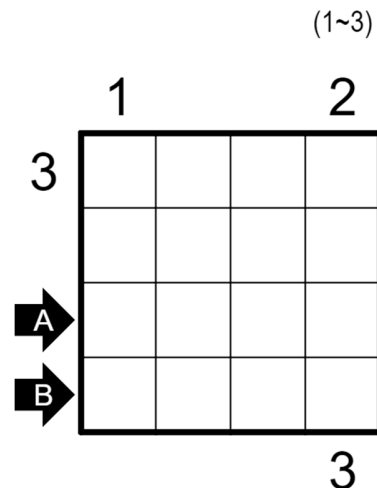
7-9 TomTom

2 + 2 + 3 points

Place a digit from 1 to N into each cell in the N by N grid so that no digit repeats in any row or column. Also, the number in the upper-left corner of each bold cage indicates the value of a mathematical operation (addition, subtraction, multiplication, division) applied successively to all digits in the cage, starting with the largest digit for subtraction and division. The operation may or may not be given in the cage, but at least one of the four operations must apply. Digits can repeat within a cage.

[The puzzles in the contest will be of sizes 5x5, 6x6 and 6x6. This example is 5x5.]

Penpa for example: https://git.io/JqepZ

puzzle ramayan   **Number Placement**
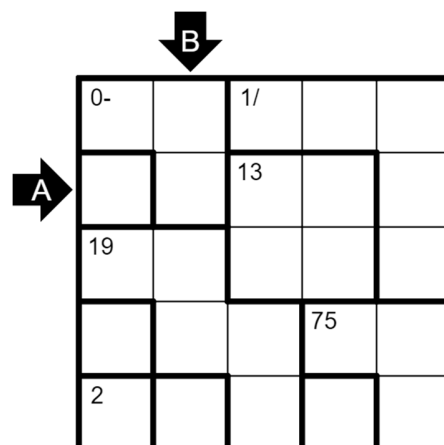
10-12 Top Heavy

2 + 3 + 12 points

Place a digit from the given range into some cells in the grid so that no digit repeats in any row or column, and all digits within the range appear exactly once in each row and column. Some cells remain blank. If two digits are in vertically adjacent cells, the greater of the two digits must be on top.

[The puzzles in the contest will be of sizes 6x6, 6x6 and 9x9. This example is 5x5.]

Penpa for example: https://git.io/JqeAn
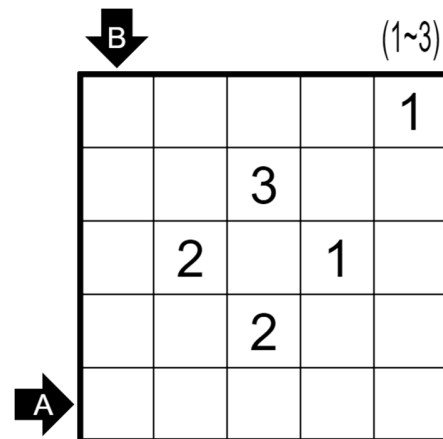
13-15 Nanro Signpost

1 + 2 + 7 points

Place numbers in some cells to form a single connected group of numbers. <u>All regions must contain at least one number.</u> Each number in a region must be equal to the total number of cells containing numbers in that region. No 2×2 group of cells may fully contain numbers. A clue in the top left of a region indicates how many cells contain numbers in that region (but not necessarily which cells). When two numbers are orthogonally adjacent across a region boundary, the numbers must be different.

[The puzzles in the contest will be of sizes 6x6, 6x9 and 10x10. This example is 6x6.]
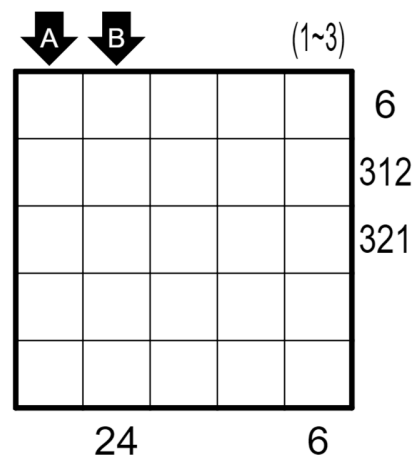
Penpa for example: https://git.io/Jqedg
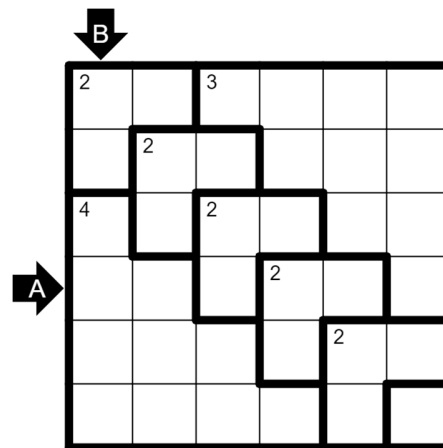
16-18 Magic Summer

1 + 8 + 16 points

Place a digit from the given range into some cells in the grid so that no digit repeats in any row or column, and all digits within the range appear exactly once in each row and column. Some cells remain blank. Digits that share an edge along a row or column are read as multi-digit numbers from left to right or top to bottom respectively. The clues outside the grid give the sum of numbers in that row or column.

[The puzzles in the contest will be of sizes 5x5, 7x7 and 8x8. This example is 5x5.]

Penpa for example: https://git.io/JqeAS

puzzle ramayan   **Number Placement**

19-20 Skyscrapers Easy as 123

4 + 5 points

Place a digit from the given range into some cells in the grid so that no digit repeats in any row or column, and all digits within the range appear exactly once in each row and column. Some cells remain blank.

The clues outside can behave as 'Skyscrapers' clues or 'Easy as 123' clues or both. It is up to the solver to determine what each clue is.

[The puzzles in the contest will be of sizes 5x5 and 6x6. This example is 4x4.]

Penpa for example: https://git.io/Jqexc
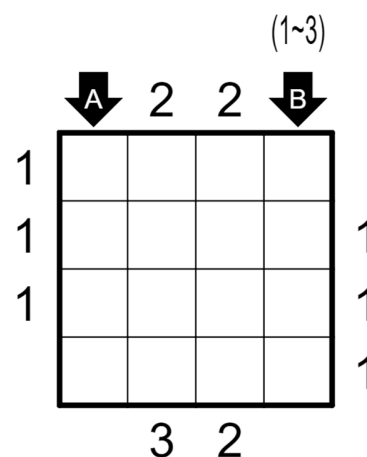
21-22 Top Heavy TomTom

6 + 10 points

Place a digit from the given range into some cells in the grid so that no digit repeats in any row or column, and all digits within the range appear exactly once in each row and column. Some cells remain blank.

The cages follow 'TomTom' rules, and the grid follows 'Top Heavy' rules.

Also, all cells of the clued TomTom cages must contain digits, i.e. cannot be empty.

[The puzzles in the contest will be of sizes 6x6 and 9x9. This example is 5x5.]

Penpa for example: https://git.io/Jqexj
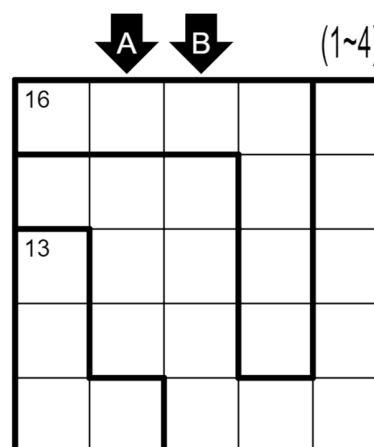
Solutions

For this round, all answer keys will be the same - For each marked row/column, enter the digits in that direction, using X for empty cells - from left to right / top to bottom. Enter the units digit for multi-digit numbers.

Skyscrapers

B↓ 4

4	1	2	3
3	2	1	4
1	3	4	2
2	4	3	1

1 (left), 2 (right), 3 (bottom), A→

Key: 2431, 4312

Easy as 123

(1~3)

1   2

X	3	1	2
1	2	3	X
3	X	2	1
2	1	X	3

3 (left), A→, B→, 3 (bottom)

Key: 3X21, 21X3

TomTom

B↓

0 5	3	1/ 1	2	4
3	2	13 5	4	1
19 4	5	3	1	2
1	4	2	75 5	3
2 2	1	4	3	5

A→

Key: 32541, 32541

Top Heavy

B↓   (1~3)

2	3	X	X	1
1	X	3	2	X
X	2	X	1	3
3	1	2	X	X
X	X	1	3	2

A→

Key: XX132, 21X3X

Nanro Signpost

B↓

2 2	X	3 X	X	X	X
2	2 X	2	3	X	X
4 4	2	2 X	2	3	X
X	4	2	2 X	2	3
X	X	4	2	2 X	2
X	X	X	4	2	1

A→

Key: X42X23, 224XXX

Magic Summer

A↓ B↓   (1~3)

2	X	1	X	3	6
3	1	2	X	X	312
X	X	3	2	1	321
1	2	X	3	X	
X	3	X	1	2	

24   6

Key: 23X1X, X1X23

Skyscrapers Easy as 123

(1~3)

	A↓	2	2	B↓	
1	3	X	1	2	
1	1	2	3	X	1
1	X	1	2	3	1
	2	3	X	1	1
		3	2		

Key: 31X2, 2X31

Top Heavy TomTom

A↓ B↓ (1~4)

¹⁶1	3	2	4	X
X	2	1	3	4
¹³4	1	X	2	3
3	X	4	1	2
2	4	3	X	1

Key: 321X4, 21X43

puzzle ramayan

Number Placement