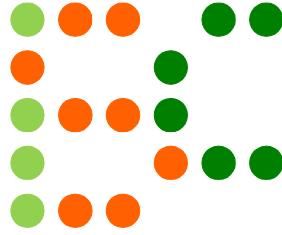


# इयरोक्य ललहलभलरलत



Episode – 6  
1<sup>st</sup> – 5<sup>th</sup> June 2018  
Irregular & Hybrid Variations  
By  
Ashish Kumar

Sudoku Mahabharat rounds will also serve as qualifiers for Indian Sudoku Championship for year 2018. Please check <http://logicmastersindia.com/SM/2018sm.asp> for details.

## Important Links

Submission Page : <http://logicmastersindia.com/SM/201806>

Discussion Thread : <http://logicmastersindia.com/t/?tid=1864>

F. A. Q. : <http://logicmastersindia.com/t/?tid=381>

Registration, if required : <http://logicmastersindia.com/register.asp>

## About this Episode

Apart from Classic Sudokus of different sizes, this episode has the following six variants

- Irregular Sudoku
- Scattered Sudoku
- Toroidal Sudoku
- One Diagonal - Disjoint Sudoku
- Skyscraper - Outside Sudoku
- Row Sum - Extra Region Sudoku

## How to participate?

- Understand the rules of different Sudokus that will appear in this episode. This Instruction Booklet has rules for each Sudoku.
- Download the password protected Sudoku booklet (will be uploaded before the test starts). The Sudoku booklet contains the actual Sudokus to be solved. It is password protected, so you won't be able to open it.
- Any time on or after 1<sup>st</sup> June (but on or before 5<sup>th</sup> 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.
- You can either solve online using flash interface or print the pdf and solve on paper.
- Each Sudoku will be marked with two arrows
- If solving on paper
  - Fill the answer form with digits along the marked arrow(s)
  - Click submit button
- If solving online
  - After solving the Sudoku, click on "Submit" button below the grid
  - Each Sudoku grid has different submit buttons

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

## Points Table and Scoring

Points typically indicate difficulty of the Sudokus and time required to solve them. While the organizers have made best efforts to match them, your personal experience and preference may differ.

This test uses instant grading where a solver can submit any individual Sudoku and receive confirmation that the solution is correct or not.

<b>Standard 1-6</b>	<b>1, 4</b>
<b>Standard 1-9</b>	<b>5, 5, 3, 7</b>
<b>Irregular 1-6, 1-9</b>	<b>2, 8</b>
<b>Scattered (6x6) 1-6, 1-9</b>	<b>3, 13</b>
<b>Toroidal 1-6, 1-9</b>	<b>3, 10</b>
<b>One Diagonal - Disjoint 1-6, 1-9</b>	<b>1, 13</b>
<b>Outside - Skyscraper 1-6, 1-9</b>	<b>2, 8</b>
<b>Row Sum - ER 1-6, 1-9</b>	<b>2, 10</b>

Each incorrect submission reduces the sudoku's potential score. The first, second, third, and fourth incorrect submissions reduce the potential score to 90%, 70%, 40%, and 0% respectively.

## Bonus

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

## General Rules

To make the rules less repetitive, you will see following line "Apply standard Sudoku rules" in most Sudoku rules. This means "Place a digit from 1 to N, where N is the size of the grid, in each empty cell so that each digit appears exactly once in each row, column and outlined region."

These outlined regions could be 3X3 boxes, or other shapes.

Each Sudoku will be marked with, at max, 2 lettered arrows. If you are solving on paper, you need to submit the digits in these arrows, in order, including the givens. For example, the answer key for the Sudoku at the right is 162897453, 517698432.

3	8	7	4	6	5	1	2	9
9	5	4	2	3	1	7	6	8
1	6	2	8	9	7	4	5	3
2	9	3	1	4	6	8	7	5
8	7	1	5	2	9	3	4	6
5	4	6	3	7	8	9	1	2
7	2	5	9	8	4	6	3	1
6	1	9	7	5	3	2	8	4
4	3	8	6	1	2	5	9	7

## About the Sudoku Booklet

The password protected Sudoku booklet will have about 9 pages. If you are planning to solve on paper, we advise you to have a printer accessible with enough paper.

The Sudoku booklet will look exactly like next pages in this instruction booklet. The font sizes, cell sizes, colors, borders, shading, margin will be identical. We recommend you to print few pages of this instruction booklet. You can avoid any last minute surprise during the test.

## Standard Sudoku 1

1 point

Place a digit from 1 to 6 in each empty cell so that each digit appears exactly once in each row, column and 2X3 box.

1	2				
		3	4		
				5	6
3	5				
		1	5		
				1	3

## Standard Sudoku 2

4 points

Place a digit from 1 to 6 in each empty cell so that each digit appears exactly once in each row, column and 2X3 box.

	1	3			
	6	4			
	3	2			
			3	1	
			1	5	
			2	4	

### Standard Sudoku 3

5 points

Place a digit from 1 to 9 in each empty cell so that each digit appears exactly once in each row, column and 3X3 box.

D

	1						8	
8		7				4		2
	9		4		2		3	
		9		3		7		
			5		4			
		6		9		5		
	7		1		6		5	
1		4				6		3
	6						7	

C

### Standard Sudoku 4

5 points

Place a digit from 1 to 9 in each empty cell so that each digit appears exactly once in each row, column and 3X3 box.

F

3	8		4	6		1	2	
9	5		2	3		7	6	
2	9		1	4		8	7	
8	7		5	2		3	4	
7	2		9	8		6	3	
6	1		7	5		2	8	

E

## Standard Sudoku 5

3 points

Place a digit from 1 to 9 in each empty cell so that each digit appears exactly once in each row, column and 3X3 box.

	3	7		1	6		9	5
	1			8			6	
	9	2		3	1		7	6
	8			7			1	
	7	3		5	4		8	9
	5			9			3	

## Standard Sudoku 6

7 points

Place a digit from 1 to 9 in each empty cell so that each digit appears exactly once in each row, column and 3X3 box.

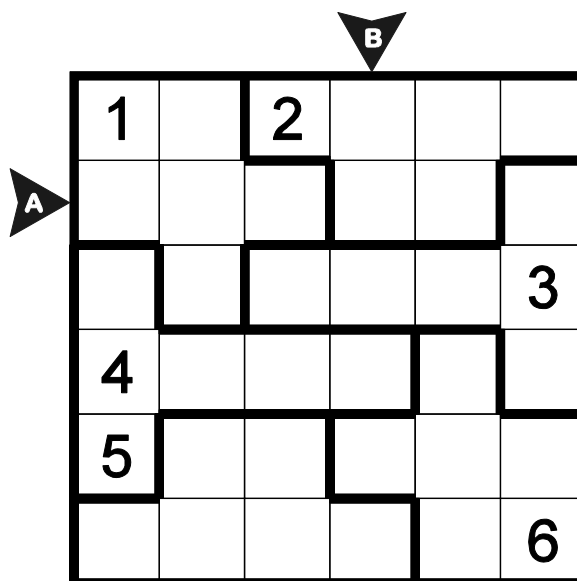
2				6				3
			4		1			
5	1						4	6
		9		5		6		
	7		6		8		1	
		5		3		4		
9	5						6	4
			2		5			
7				9				5

## Irregular Sudoku 1

2 points

Place a digit from 1 to 6 in each empty cell so that each digit appears exactly once in each row, column and outlined region.

Each outlined region is marked by thick borders.

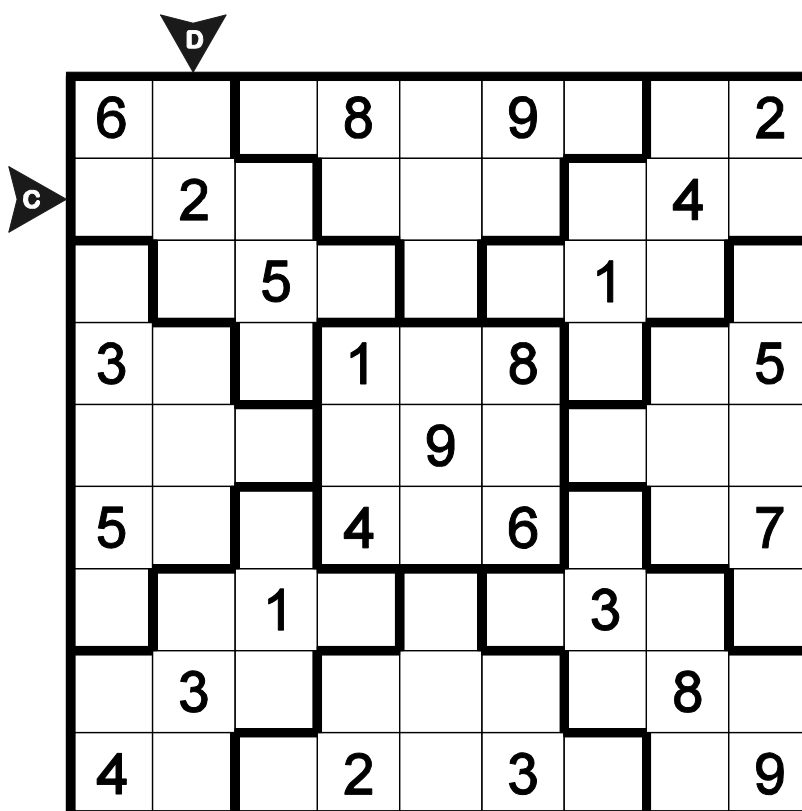


## Irregular Sudoku 2

8 points

Place a digit from 1 to 9 in each empty cell so that each digit appears exactly once in each row, column and outlined region.

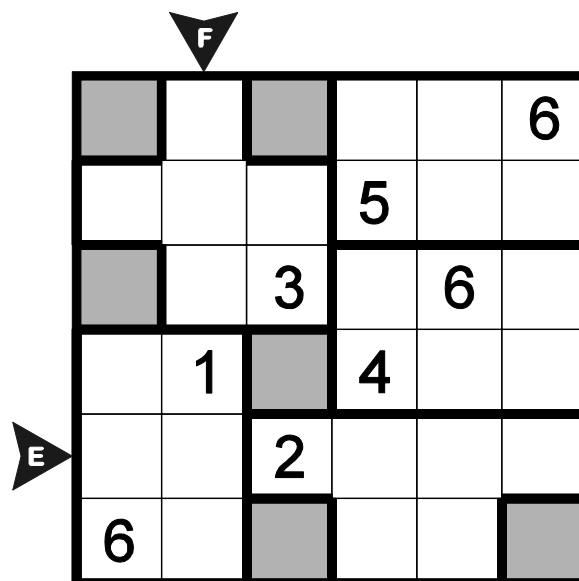
Each outlined region is marked by thick borders.



## Scattered Sudoku 1

3 points

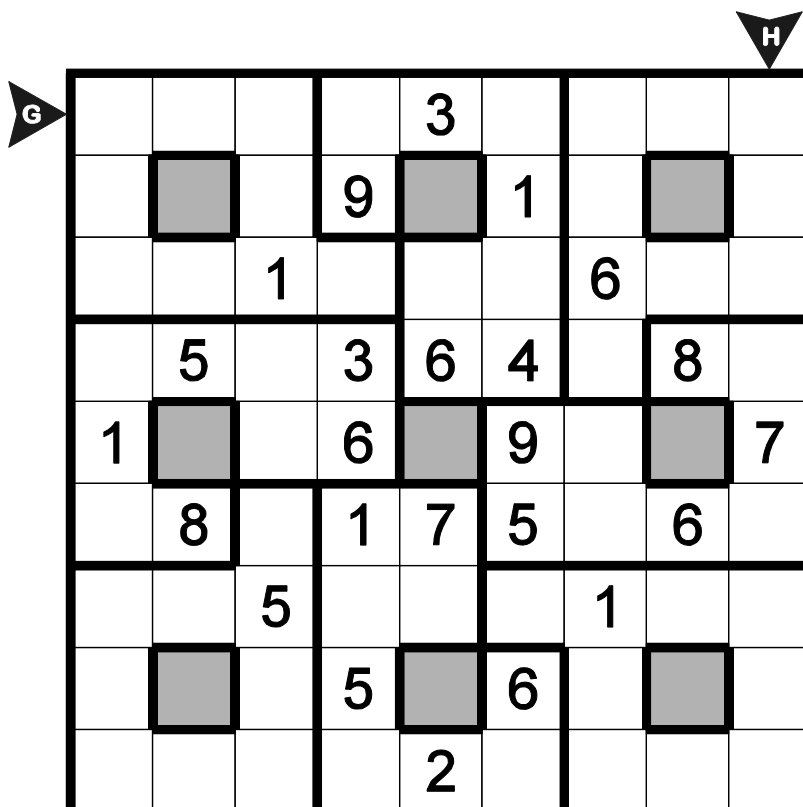
Place a digit from 1 to 6 in each empty cell so that each digit appears exactly once in each row, column, outlined region and the six grey cells.



## Scattered Sudoku 2

13 points

Place a digit from 1 to 9 in each empty cell so that each digit appears exactly once in each row, column, outlined region and the nine grey cells.





### Toroidal Sudoku 1

3 points

Place a digit from 1 to 6 in each empty cell so that each digit appears exactly once in each row, column and outlined region.

Some of the outlined regions wrap between the top and bottom edges, and/or the left and right edges of the grid.

			1	2	3
				3	4
					5

### Toroidal Sudoku 2

10 points

Place a digit from 1 to 9 in each empty cell so that each digit appears exactly once in each row, column and outlined region.

Some of the outlined regions wrap between the top and bottom edges, and/or the left and right edges of the grid.

	2	7	1	9	8	6	5	
1	5						8	9
2								7
6			4	7	2			8
7			9		6			2
3			7	4	9			5
8								4
5	7						3	6
	8	6	5	3	7	4	2	

### One Diagonal - Disjoint Sudoku 1

1 point

Apply standard Sudoku rules.

One Diagonal rules: One diagonal (marked by a dotted line) must contain digits from 1-6.

Disjoint rules: No digit can appear in the same position in different 2X3 boxes.

### One Diagonal - Disjoint Sudoku 2

13 points

Apply standard Sudoku rules.

One Diagonal rules: One diagonal (marked by a dotted line) must contain digits from 1-9.

Disjoint rules: No digit can appear in the same position in different 3X3 boxes.

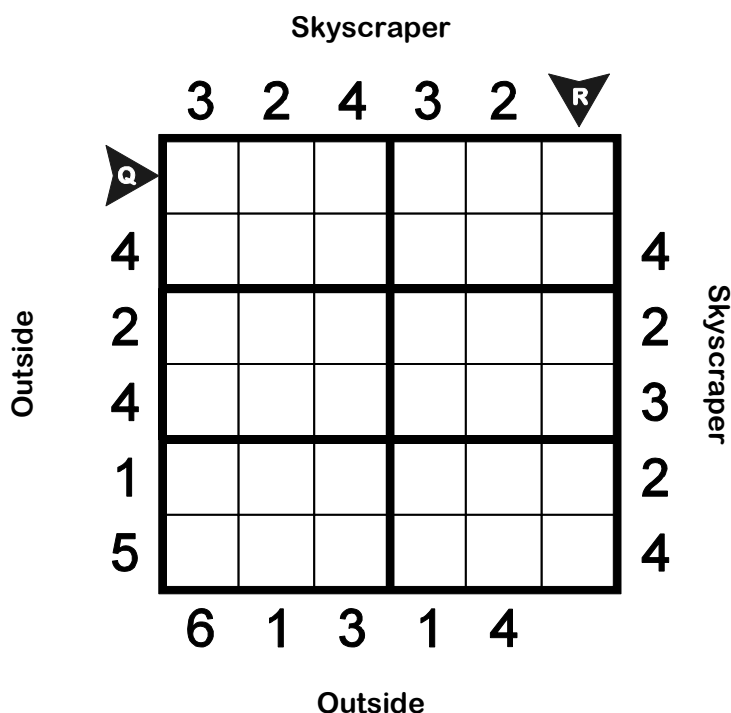
## Outside Skyscraper Sudoku 1

2 points

Apply standard Sudoku rules. Clues at the left and bottom are Outside clues, and clues at right and top are Skyscraper clues.

Outside rules: The digits outside the grid must appear in one of the cells in the first box (till the next bold line) seen from that edge of the grid.

Skyscraper rules: Consider each number to be the height of a building. The numbers outside the grid indicate how many buildings can be seen when looking in that direction (taller buildings conceal smaller buildings behind them).



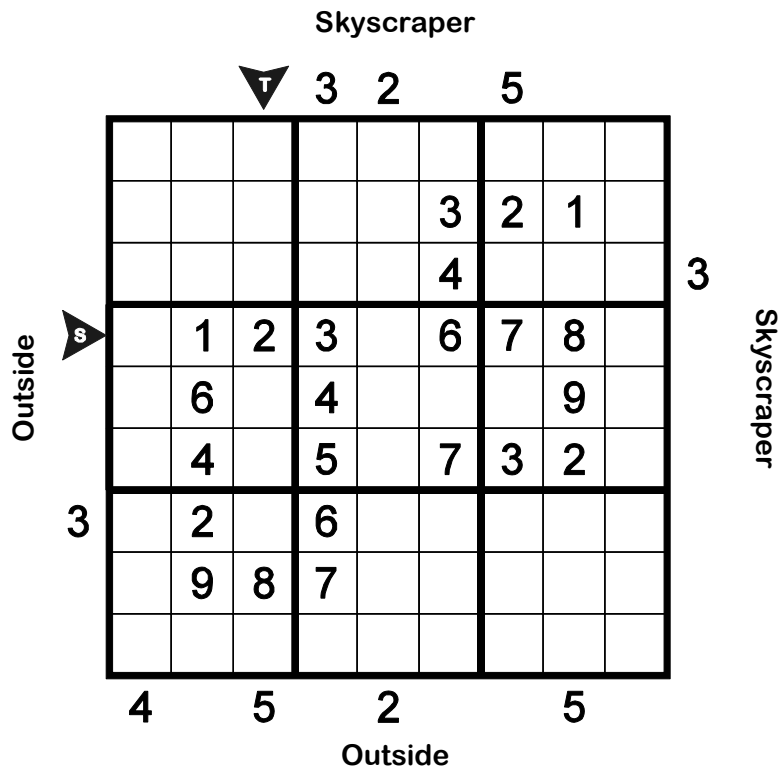
## Outside Skyscraper Sudoku 2

8 points

Apply standard Sudoku rules. Clues at the left and bottom are Outside clues, and clues at right and top are Skyscraper clues.

Outside rules: The digits outside the grid must appear in one of the cells in the first box (till the next bold line) seen from that edge of the grid.

Skyscraper rules: Consider each number to be the height of a building. The numbers outside the grid indicate how many buildings can be seen when looking in that direction (taller buildings conceal smaller buildings behind them).



### Row Sum - Extra Region Sudoku 1

2 points

Apply standard Sudoku rules.

Row Sum rules: For each row containing grey circles, one circled cell contains a digit which is the sum of digits in all other circled cells in the row.

Extra Region rules: Each extra region must contain digits from 1-6. The extra regions are of 6 cells each and are shaded in the grid.

	u			v	
5	●	●	●		6
				5	
			4		
		3			
	2				
1		●	●	●	5

### Row Sum - Extra Region Sudoku 2

10 points

Apply standard Sudoku rules.

Row Sum rules: For each row containing grey circles, one circled cell contains a digit which is the sum of digits in all other circled cells in the row.

Extra Region rules: Each extra region must contain digits from 1-9. The extra regions are of 9 cells each and are shaded in the grid.

1	2	3	7	5	6	8	4	9
4								6
5								7
2								4
w	6		4	7	2			5
7			●	●	●			2
3		●		●		●		1
x	8	●		●			●	3
9	6	7	3	1	4	2	5	8

Standard - 1

1	2	4	6	3	5
5	6	3	4	2	1
4	1	2	3	5	6
3	5	6	1	4	2
2	3	1	5	6	4
6	4	5	2	1	3

Standard - 2

5	1	3	6	2	4
2	6	4	5	3	1
1	3	2	4	6	5
6	4	5	3	1	2
4	2	6	1	5	3
3	5	1	2	4	6

Standard - 3

4	1	2	6	7	3	9	8	5
8	3	7	9	1	5	4	6	2
6	9	5	4	8	2	1	3	7
2	5	9	8	3	1	7	4	6
7	8	1	5	6	4	3	2	9
3	4	6	2	9	7	5	1	8
9	7	3	1	2	6	8	5	4
1	2	4	7	5	8	6	9	3
5	6	8	3	4	9	2	7	1

Standard - 4

3	8	7	4	6	5	1	2	9
9	5	4	2	3	1	7	6	8
1	6	2	8	9	7	4	5	3
2	9	3	1	4	6	8	7	5
8	7	1	5	2	9	3	4	6
5	4	6	3	7	8	9	1	2
7	2	5	9	8	4	6	3	1
6	1	9	7	5	3	2	8	4
4	3	8	6	1	2	5	9	7

Standard - 5

9	6	8	5	4	7	1	2	3
4	3	7	2	1	6	8	9	5
2	1	5	9	8	3	7	6	4
7	4	1	6	2	9	3	5	8
5	9	2	8	3	1	4	7	6
3	8	6	4	7	5	9	1	2
1	2	9	3	6	8	5	4	7
6	7	3	1	5	4	2	8	9
8	5	4	7	9	2	6	3	1

Standard - 6

2	8	4	5	6	9	1	7	3
3	9	6	4	7	1	2	5	8
5	1	7	3	8	2	9	4	6
8	2	9	1	5	4	6	3	7
4	7	3	6	2	8	5	1	9
1	6	5	9	3	7	4	8	2
9	5	2	7	1	3	8	6	4
6	3	8	2	4	5	7	9	1
7	4	1	8	9	6	3	2	5



One Diagonal - Disjoint - 1

5	1	2	3	4	6
3	4	6	2	5	1
2	5	1	4	6	3
4	6	3	5	1	2
6	2	5	1	3	4
1	3	4	6	2	5

One Diagonal - Disjoint - 2

8	9	2	5	1	4	3	6	7
3	1	6	7	9	8	5	4	2
7	5	4	3	6	2	8	1	9
4	7	8	1	5	9	6	2	3
9	6	3	8	2	7	4	5	1
5	2	1	6	4	3	9	7	8
2	4	5	9	8	1	7	3	6
6	3	9	2	7	5	1	8	4
1	8	7	4	3	6	2	9	5

Row Sum - Extra Region - 1

5	1	2	3	4	6
3	4	6	2	5	1
2	5	1	4	6	3
4	6	3	5	1	2
6	2	5	1	3	4
1	3	4	6	2	5

Outside Skyscraper - 1

3	2	4	3	2			
2	3	1	4	5	6		
4	5	6	4	2	3	1	4
2	1	2	5	3	6	4	2
4	3	4	6	5	1	2	3
1	4	1	3	6	2	5	2
5	6	5	2	1	4	3	4
6	1	3	1	4			

Outside Skyscraper - 2

3	2	5							
9	3	6	2	7	1	5	4	8	
7	5	4	8	6	3	2	1	9	
2	8	1	9	5	4	6	7	3	3
5	1	2	3	9	6	7	8	4	
3	6	7	4	8	2	1	9	5	
8	4	9	5	1	7	3	2	6	
1	2	3	6	4	9	8	5	7	3
6	9	8	7	2	5	4	3	1	
4	7	5	1	3	8	9	6	2	
4	5	2	5						

Row Sum - Extra Region - 2

1	2	3	7	5	6	8	4	9
4	7	8	1	9	3	5	2	6
5	9	6	2	4	8	3	1	7
2	3	9	5	8	1	7	6	4
6	8	1	4	7	2	9	3	5
7	4	5	6	3	9	1	8	2
3	5	4	8	2	7	6	9	1
8	1	2	9	6	5	4	7	3
9	6	7	3	1	4	2	5	8