Sudoku Mahabharat

Episode – 5
17th– 19th January

Math Variations by Prasanna Seshadri

Important Links

Submission Page : http://logicmastersindia.com/SM/201501

Discussion Thread : http://logicmastersindia.com/t/?tid=926

About Sudoku Mahabharat : http://logicmastersindia.com/SM/

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 five variants based on basic mathematical operations (addition, subtraction, multiplication, division), namely Arrow Sudoku, Killer Sudoku, Frame Sudoku, Product Sudoku and Mathdoku.

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 after 17th January (but before 19th January), login at the submission page using your LMI userid and password.
- LMI uses GMT time zone. 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 arrows
    - 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

Standard 6X6	1, 1, 1, 1
Standard 8X8	3
Standard 9X9	5, 3, 5
Arrow 6X6, 9X9	7, 11
Killer 6X6, 9X9	4, 12
Frame 6X6, 9X9	2, 13
Product 6X6, 9X9	3, 9
Mathdoku 6X6, 9X9	4, 15

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

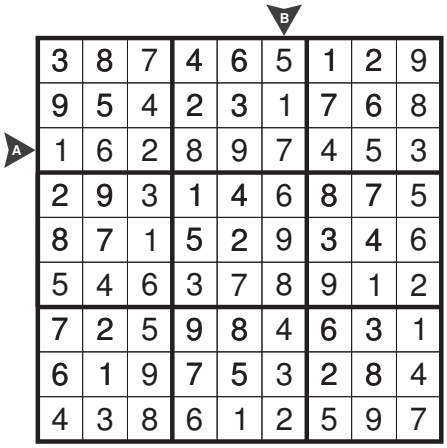
Bonus

If you submitted all sudokus correctly, you can have bonus points 1 point per minute saved, computed upto 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

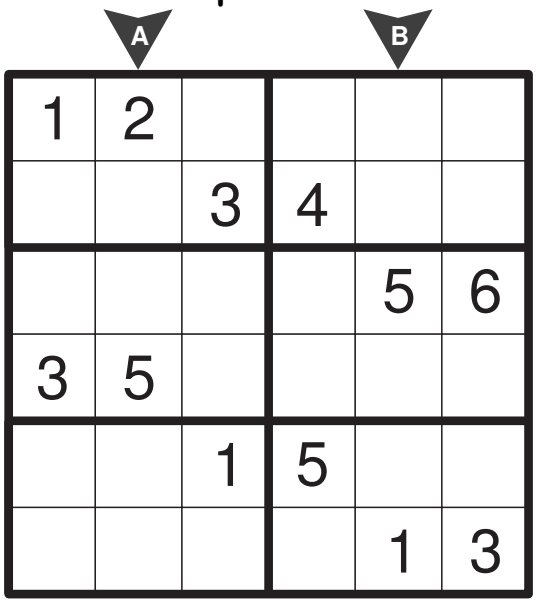
The password protected Sudoku booklet will have 8 pages. If you are planning to solve on paper, we advise you to have a printer accessible with enough paper.

The Sudoku booklet will look exactly like next 8 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.

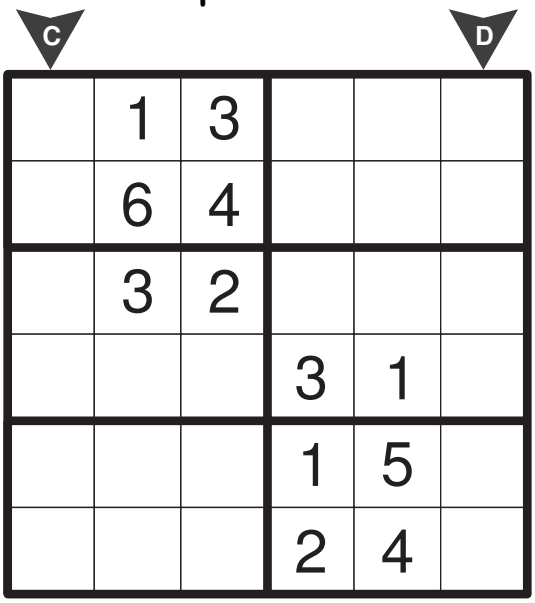
Standard Sudoku

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.

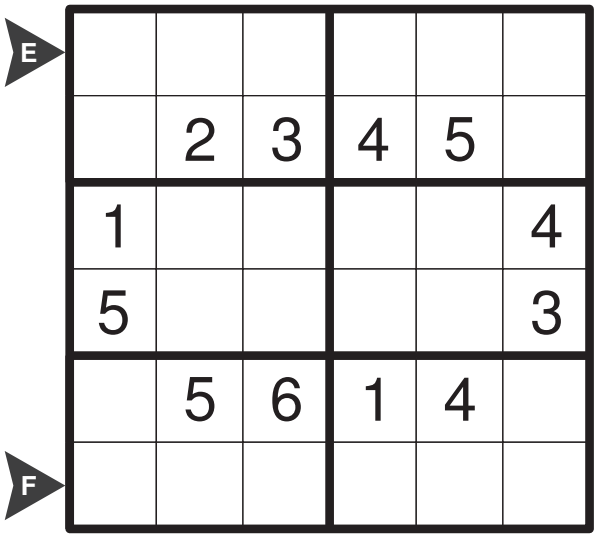
1 point



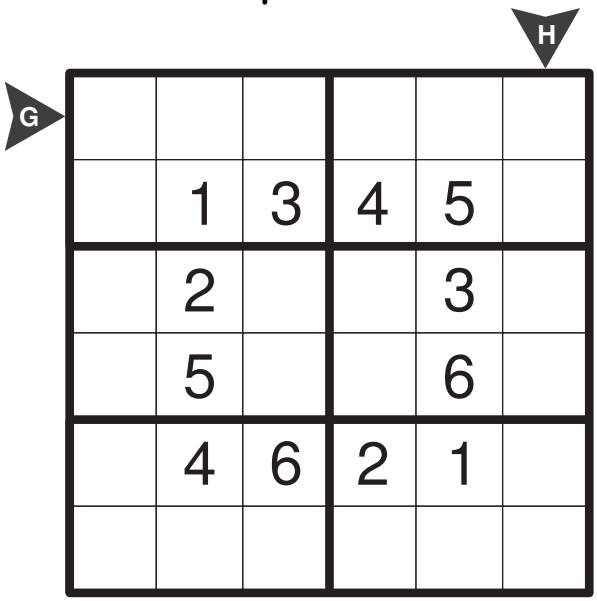
1 point



1 point



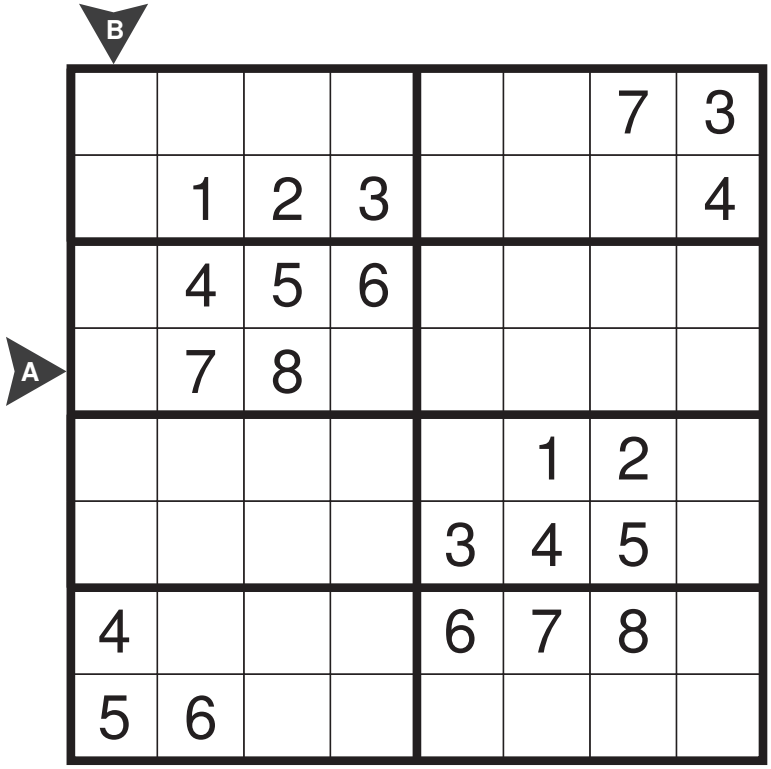
1 point



Standard Sudoku

3 points

Place a digit from 1 to 8 in each empty cell so that each digit appears exactly once in each row, column and 2X4 box.

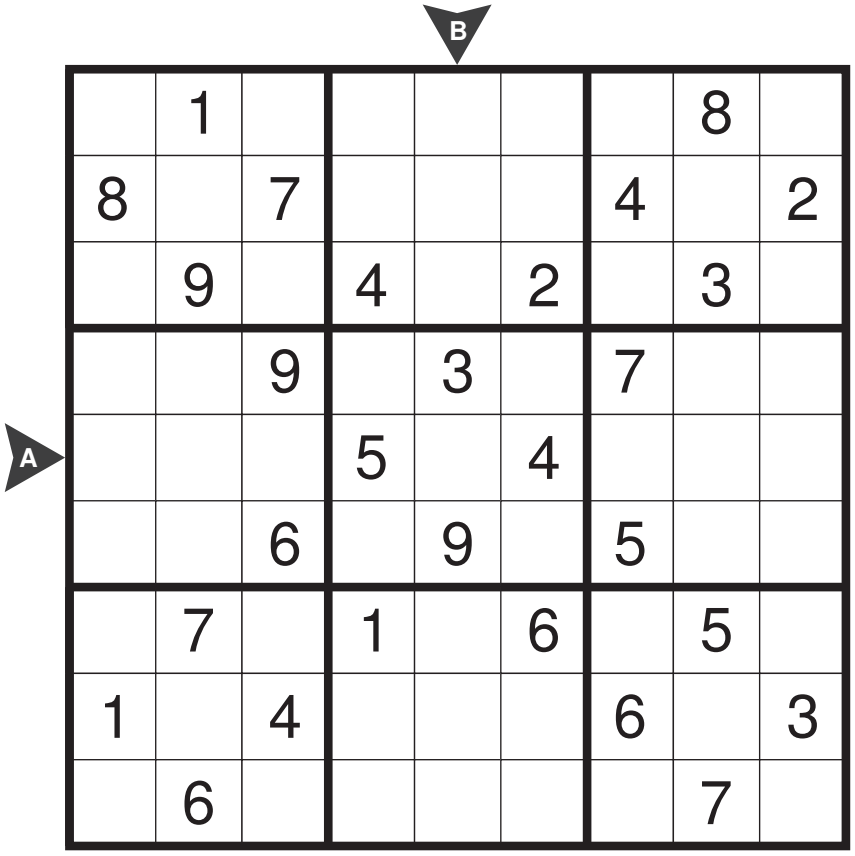


						7	3
	1	2	3				4
	4	5	6				
	7	8					
					1	2	
				3	4	5	
4				6	7	8	
5	6						

Standard Sudoku

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.

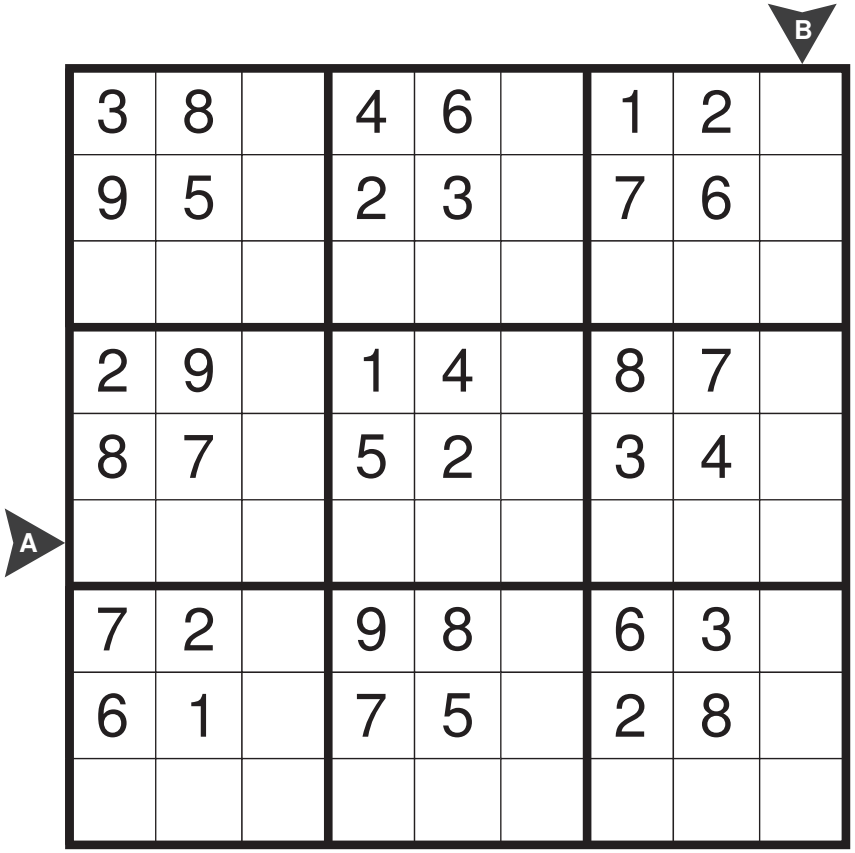


	1						8	
8		7				4		2
	9		4		2		3	
		9		3		7		
			5		4			
		6		9		5		
	7		1		6		5	
1		4				6		3
	6						7	

Standard Sudoku

3 points

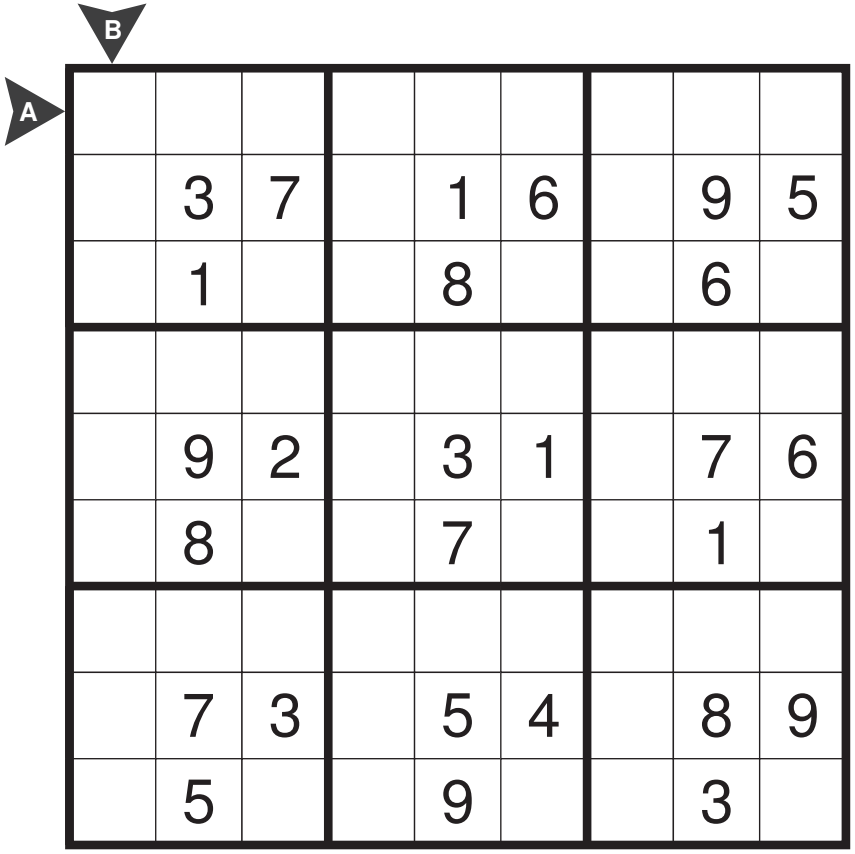
Place a digit from 1 to 9 in each empty cell so that each digit appears exactly once in each row, column and 3X3 box.



Standard Sudoku

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.

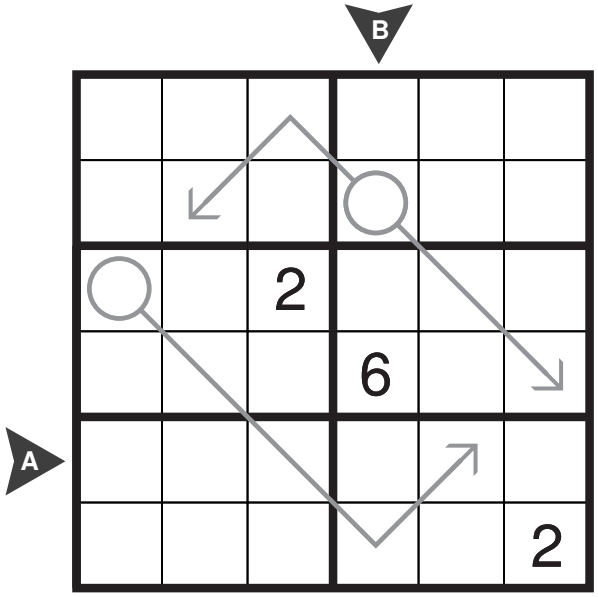


Arrow Sudoku

7 points

Apply standard Sudoku rules.

The sum of the digits along the path of each arrow must equal the digit in the circled cell. Digits can repeat within an arrow shape.

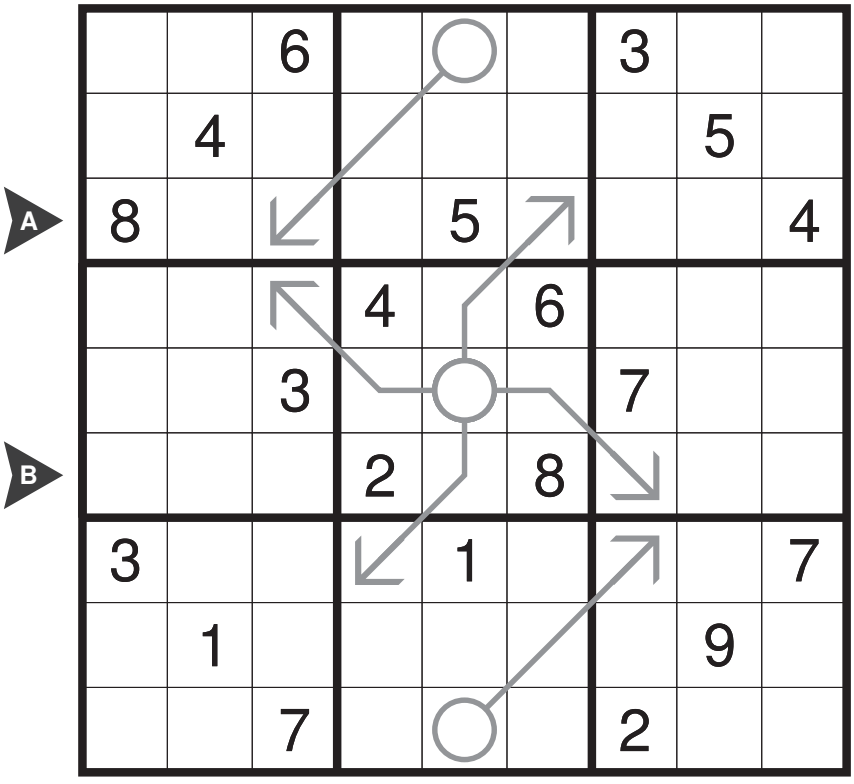


Arrow Sudoku

11 points

Apply standard Sudoku rules.

The sum of the digits along the path of each arrow must equal the digit in the circled cell. Digits can repeat within an arrow shape.

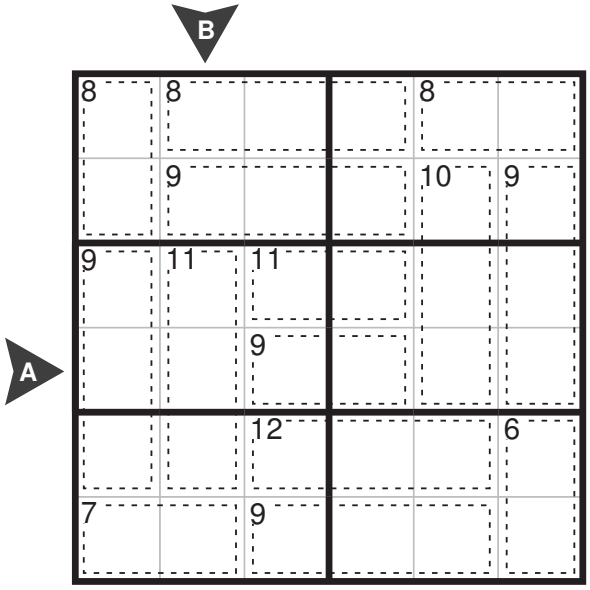


Killer Sudoku

4 points

Apply standard Sudoku rules.

The sum of digits in cells inside every cage must equal the total given for the cage at the upper left cell. Digits do not repeat inside a cage.

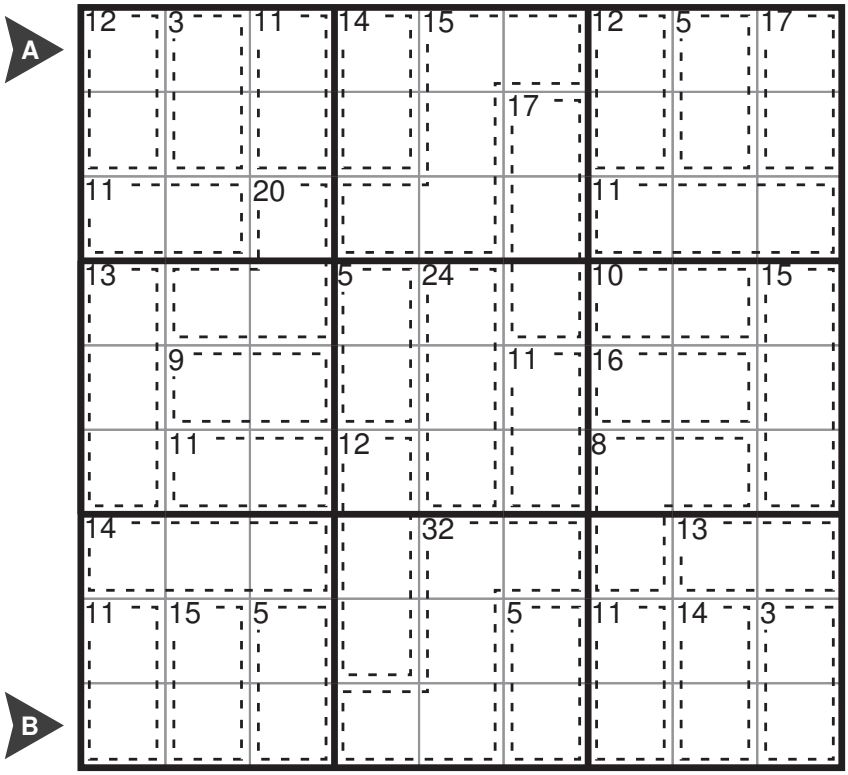


Killer Sudoku

12 points

Apply standard Sudoku rules.

The sum of digits in cells inside every cage must equal the total given for the cage at the upper left cell. Digits do not repeat inside a cage.

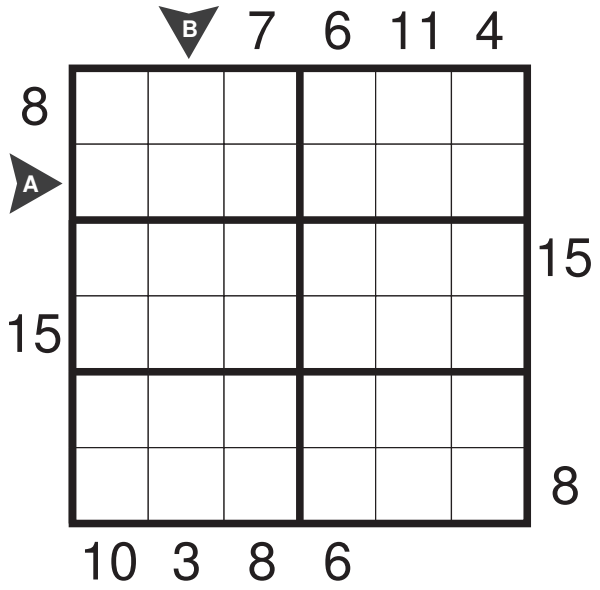


Frame Sudoku

2 points

Apply standard Sudoku rules.

Numbers outside the grid equal the sum of the digits appearing in the cells in the first box (till the next bold line) seen from that edge of the grid.

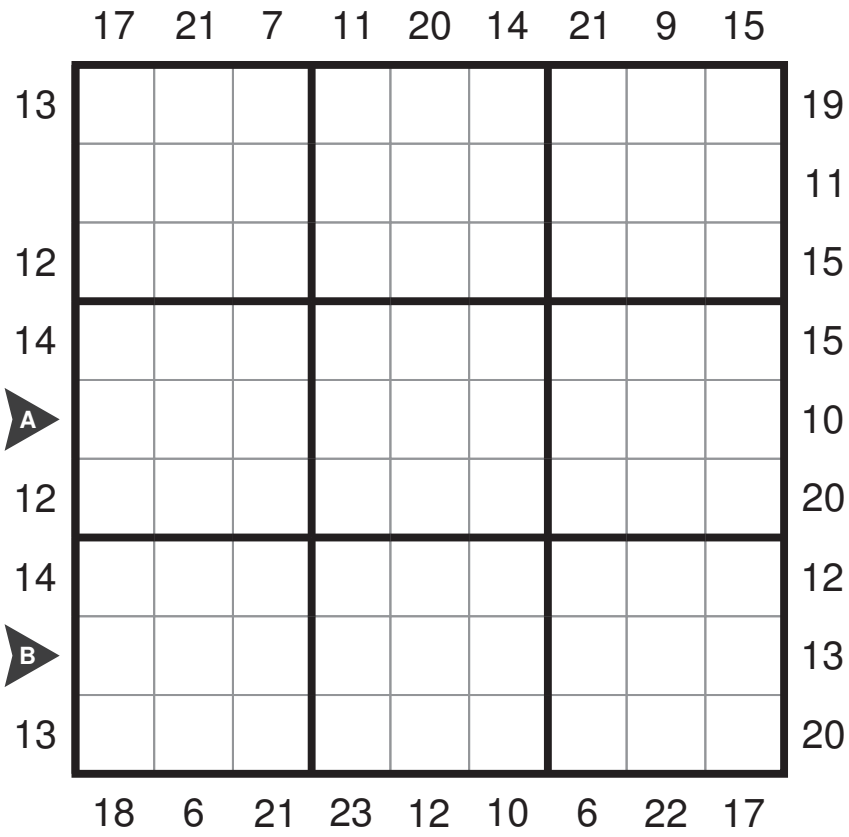


Frame Sudoku

13 points

Apply standard Sudoku rules.

Numbers outside the grid equal the sum of the digits appearing in the cells in the first box (till the next bold line) seen from that edge of the grid.

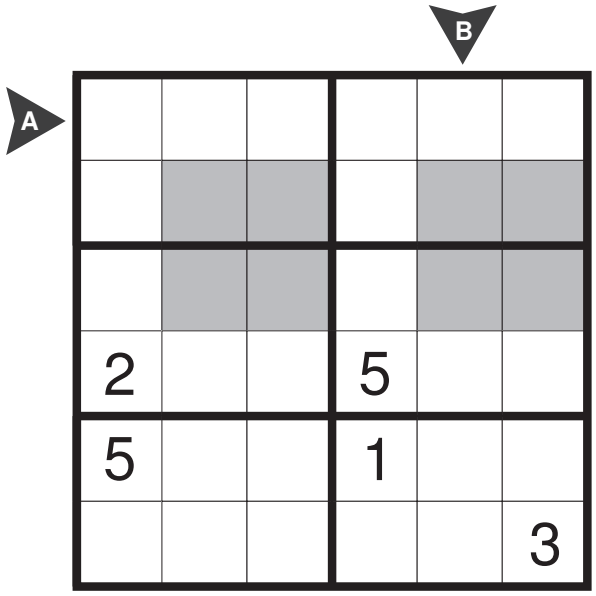


Product Sudoku

3 points

Apply standard Sudoku rules.

For each shaded 2x2 area, the two-digit number formed in the bottom row is the product of the two digits in the top row.

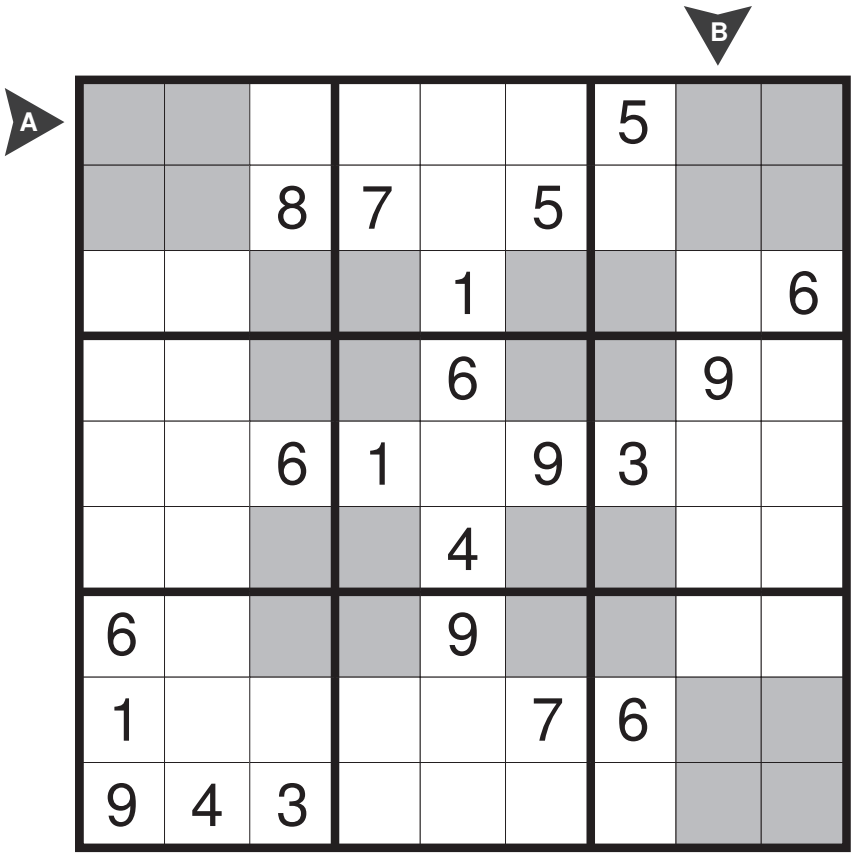


Product Sudoku

9 points

Apply standard Sudoku rules.

For each shaded 2x2 area, the two-digit number formed in the bottom row is the product of the two digits in the top row.

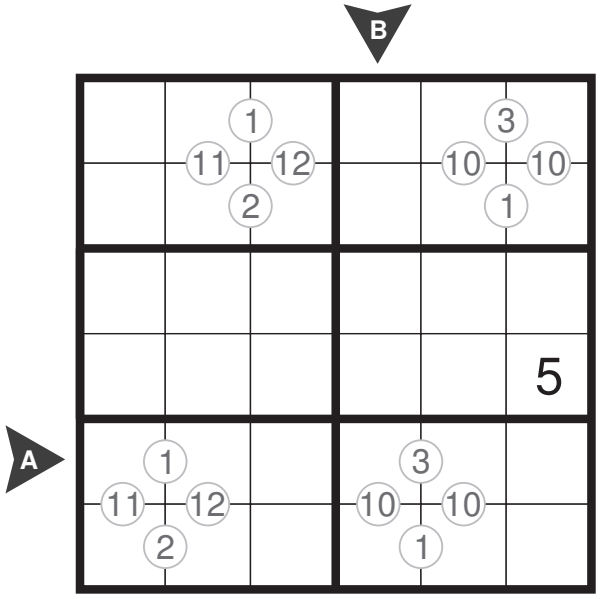


Mathdoku

4 points

Apply standard Sudoku rules.

In some 2x3 boxes, there are four circled numbers. For each box, these numbers are a result of a different mathematical operation (+, -, *, /) between the digits on each side of the circle.

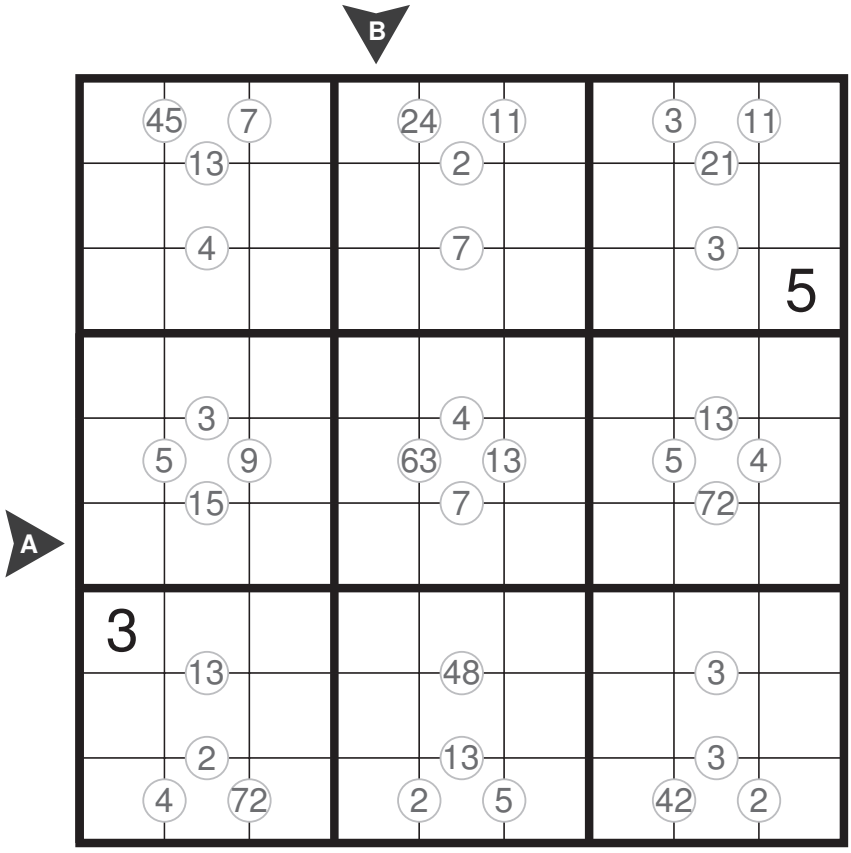


Mathdoku

15 points

Apply standard Sudoku rules.

In some 3x3 boxes, there are four circled numbers. For each box, these numbers are a result of a different mathematical operation (+, -, *, /) between the digits on each side of the circle.



Additional Examples

Additional examples for practice can be found at following blogs / sites.

Arrow Sudoku

LMI: Beginners Sudoku Contest
July 2014 – http://logicmastersindia.com/BeginnersSudoku/?test=B201407
February 2014 – http://logicmastersindia.com/BeginnersSudoku/?test=B201402
December 2013 – http://logicmastersindia.com/BeginnersSudoku/?test=B201312
Prasanna Seshadri's blog – http://prasannaseshadri.wordpress.com/category/arrow/

Killer Sudoku

LMI: Beginners Sudoku Contest
January 2013 – http://logicmastersindia.com/BeginnersSudoku/?test=B201301
December 2012 – http://logicmastersindia.com/BeginnersSudoku/?test=B201212
Prasanna Seshadri's blog – http://prasannaseshadri.wordpress.com/category/killer/

Frame Sudoku A.K.A. Outside Sums Sudoku

LMI: Beginners Sudoku Contest
March 2013 – http://logicmastersindia.com/BeginnersSudoku/?test=B201303
February 2013 – http://logicmastersindia.com/BeginnersSudoku/?test=B201302
LMI: Monthly Sudoku Test June 2012 – Sudoclones – http://logicmastersindia.com/lmitests/?test=M201206S

Prasanna Seshadri's blog – http://prasannaseshadri.wordpress.com/category/frame/

Product Sudoku A.K.A. Multiplication Table Sudoku

LMI: Speed Sixes – http://logicmastersindia.com/lmitests/?test=M201006
Fred Stalder's blog – http://sudokuvariante.blogspot.ch/search/label/Multiplication%20table
Prasanna Seshadri's blog – https://prasannaseshadri.wordpress.com/category/product-sudoku/
Sudoku Cup 2 – http://sudokucup.com/node/380

Mathdoku

Sudoku Cup 1 – http://sudokucup.com/node/169
Sudoku Cup 9 – http://sudokucup.com/node/3110

All the above Sudokucup links have Competition Puzzles PDFs which need a password from the password link on the left side of the screen.

Standard

A			B		
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

C					D
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

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

F

Standard

					H
G					
4	6	5	3	2	1
2	1	3	4	5	6
6	2	1	5	3	4
3	5	4	1	6	2
5	4	6	2	1	3
1	3	2	6	4	5

Standard

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

A

Standard

			B					
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

A

Standard

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

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

Arrow Sudoku

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

Killer Sudoku

8 5	8 1	4	3	8 2	6
3	9 6	2	1	10 5	9 4
9 2	11 4	11 6	5	1	3
1	5	9 3	6	4	2
6	2	12 5	4	3	6 1
7 4	3	9 1	2	6	5

Arrow Sudoku

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

Killer Sudoku

12 9	3 2	11 5	14 6	15 3	4	12 7	5 1	17 8
3	1	6	8	2	17 7	5	4	9
11 7	4	20 8	5	1	9	11 6	2	3
13 4	5	7	5 3	24 9	1	10 2	8	15 6
1	9 6	3	2	8	11 5	16 9	7	4
8	11 9	2	12 4	7	6	8 1	3	5
14 2	3	9	1	32 5	8	4	13 6	7
11 5	15 8	5 4	7	6	5 2	11 3	14 9	3 1
6	7	1	9	4	3	8	5	2

Frame Sudoku

	B 7	6	11	4	
8	2	5	1	4	6	3	
A	3	4	6	2	5	1	
	1	3	2	6	4	5	15
15	5	6	4	3	1	2	
	4	1	3	5	2	6	
	6	2	5	1	3	4	8
	10	3	8	6			

Product Sudoku

	B					
A	4	6	2	3	1	5
	1	5	3	2	4	6
	3	1	5	6	2	4
	2	4	6	5	3	1
	5	3	4	1	6	2
	6	2	1	4	5	3

Frame Sudoku

	17	21	7	11	20	14	21	9	15	
13	5	6	2	4	8	1	9	3	7	19
	9	7	4	5	3	6	8	1	2	11
12	3	8	1	2	9	7	4	5	6	15
14	2	9	3	7	5	4	6	8	1	15
A	7	4	8	1	6	9	5	2	3	10
12	1	5	6	3	2	8	7	4	9	20
14	8	1	5	9	7	3	2	6	4	12
B	6	3	9	8	4	2	1	7	5	13
13	4	2	7	6	1	5	3	9	8	20
	18	6	21	23	12	10	6	22	17	

Product Sudoku

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

Mathdoku

		B				
	1	5 (1) 4 (11) (12)	3	2 (3) 6 (10) (10)	
	2	6 (2) 3	1	5 (1) 4	
	4	1	5	6	3	2
	3	2	6	4	1	5
A	5 (1) 4 (11) (12)	1	2 (3) 6 (10) (10)	3
	6 (2) 3	2	5 (1) 4	1

Mathdoku

			B				
	5 (45) 9 (7) 2 (13)	6 (24) 4 (11) 7 (2)	1 (3) 3 (11) 8 (21)
	8	4 (4)	3	1	2 (7)	5	9	7 (3)	6
	7	1	6	8	9	3	2	4	5
	9	2 (3)	7	4	3 (4)	8	6	5 (13)	1
	1 (5)	5 (9)	4	9 (63)	7 (13)	6	3 (5)	8 (4)	2
	6	3 (15)	8	5	1 (7)	2	4	9 (72)	7
A	3	7 (13)	5	2	6 (48)	4	8	1 (3)	9
	4	6 (2)	1	7	8 (13)	9	5	2 (3)	3
	2 (4)	8 (72)	9	3 (2)	5 (5)	1	7 (42)	6 (2)	4