TRIPLETS and TRIANGLES

Hosted by Logic Masters India
February 2016

Puzzles set by David McNeill
Tested by Tom Collyer, Yuhei Kusui and Robert Vollmert

This Sudoku set is brought to you by the number 3. Puzzles 1-3 are classics. Puzzles 4-6 and 10 are standard variations. Puzzles 7-9 are slightly modified variations. Puzzles 11-14 are more novel. The instruction booklet explains the rules of each type accompanied by an example.

Details

- The test will last for 90 minutes
- The competition booklet will have 14 pages, each with a single puzzle
- Each puzzle has a marked row and marked column for solution entry
- When submitting solutions, enter only the digits in the row/column in order, ignoring the black triangles in puzzles 13 and 14
- Instant grading will be used
- On-line solving is not available
- The puzzle points are shown in the table below
- Solvers who complete all puzzles correctly within the time can claim 10 bonus points for every full minute saved

Points Table		
Puzzle		Points
1	Classic	15
2	Classic	20
3	Classic	30
4	Trio	15
5	Anti-Diagonal	30
6	Outside Sums	70
7	Max/Min Triplet Sums	80
8	Thropki	100
9	Thropki	80
10	Tight Fit	35
11	Non-Consecutive Squeeze	25
12	Renban Squeeze	30
13	Triangular Sums	75
14	Arrowhead	45
Total Points		650

We hope you enjoy the puzzles. Good luck.

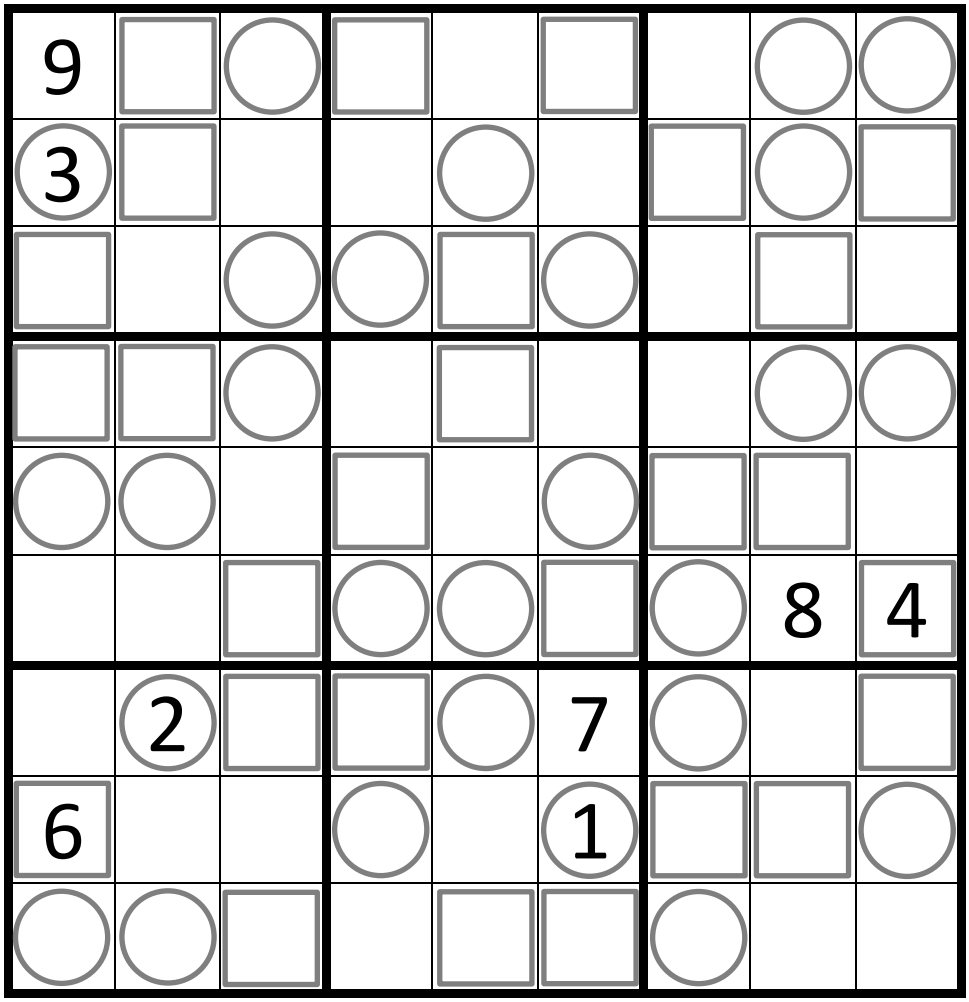
Classic

Complete the grid so that each row, column and 3x3 box contains the digits 1-9.

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

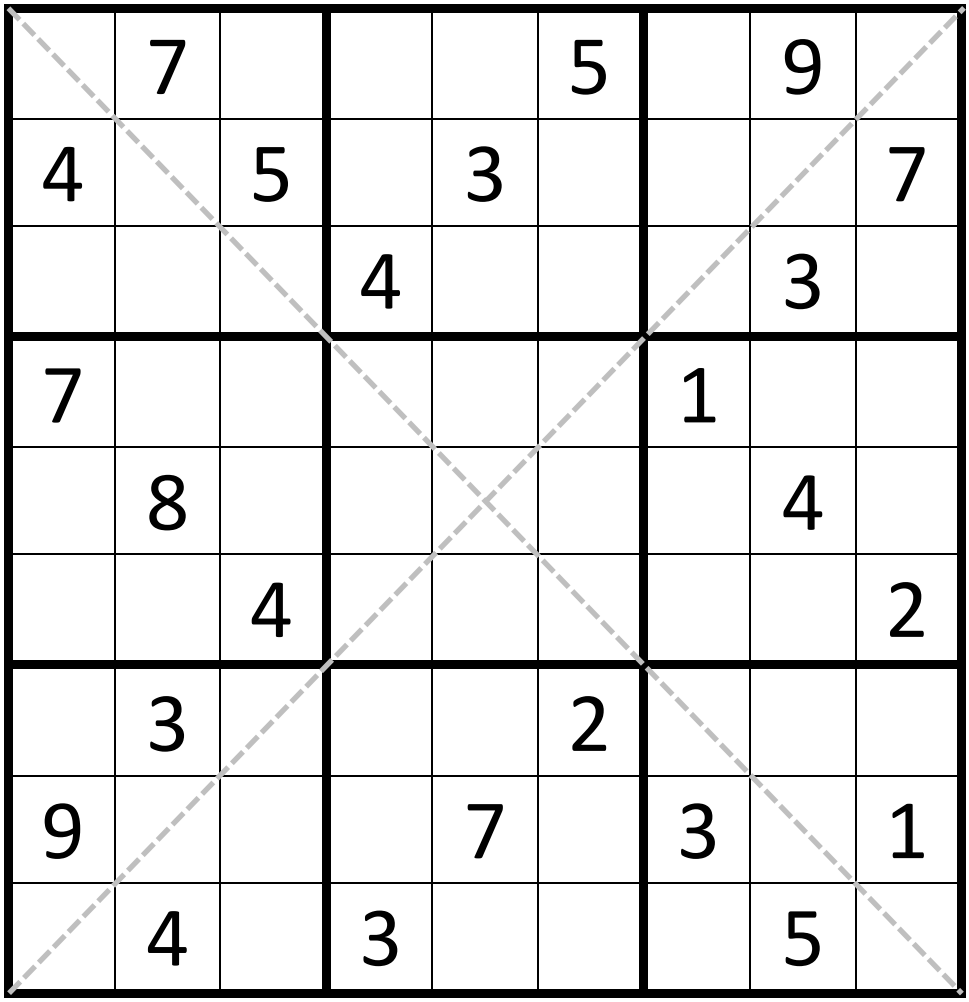
Trio

Complete the grid so that each row, column and 3x3 box contains the digits 1-9. In addition, each cell marked with a circle must contain one of the digits 1-3, each cell marked with a square must contain one of the digits 4-6, and each of the remaining cells must contain one of the digits 7-9.



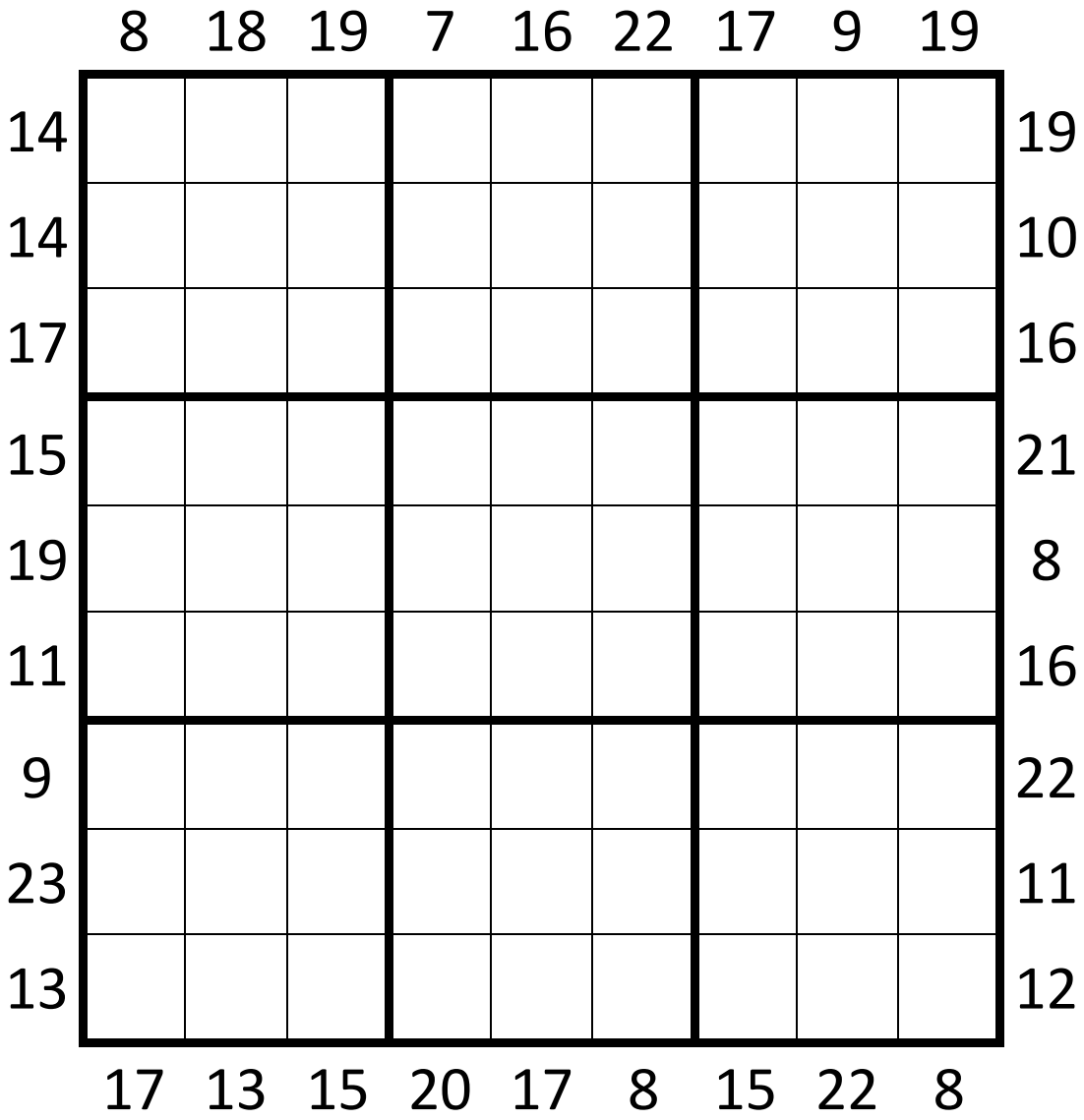
Anti-Diagonal

Complete the grid so that each row, column and 3x3 box contains the digits 1-9. In addition, each marked diagonal must contain only three different digits.



Outside Sums

Complete the grid so that each row, column and 3x3 box contains the digits 1-9. Each clue outside the grid is the sum of the first three digits in the corresponding row or column.



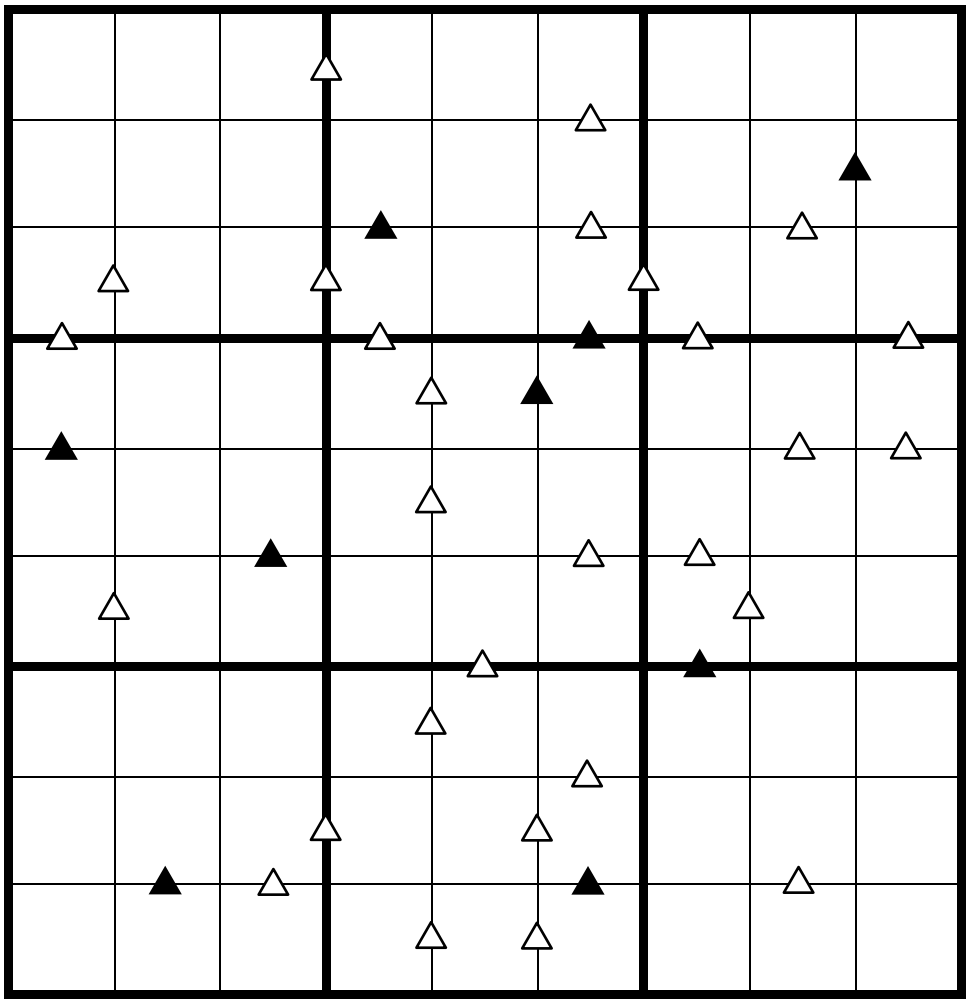
Max/Min Triplet Sums

Complete the grid so that each row, column and 3x3 box contains the digits 1-9. Each clue outside the grid is either the maximum or minimum sum of three consecutive digits observed in the corresponding row or column.

	8	22	8	22	8			
				3	8	1			
		9						8	
17			1				5		
10	8			7		3			4
20	2								8
10	9			2		8			1
17			8				6		
		3						2	
				8	2	7			

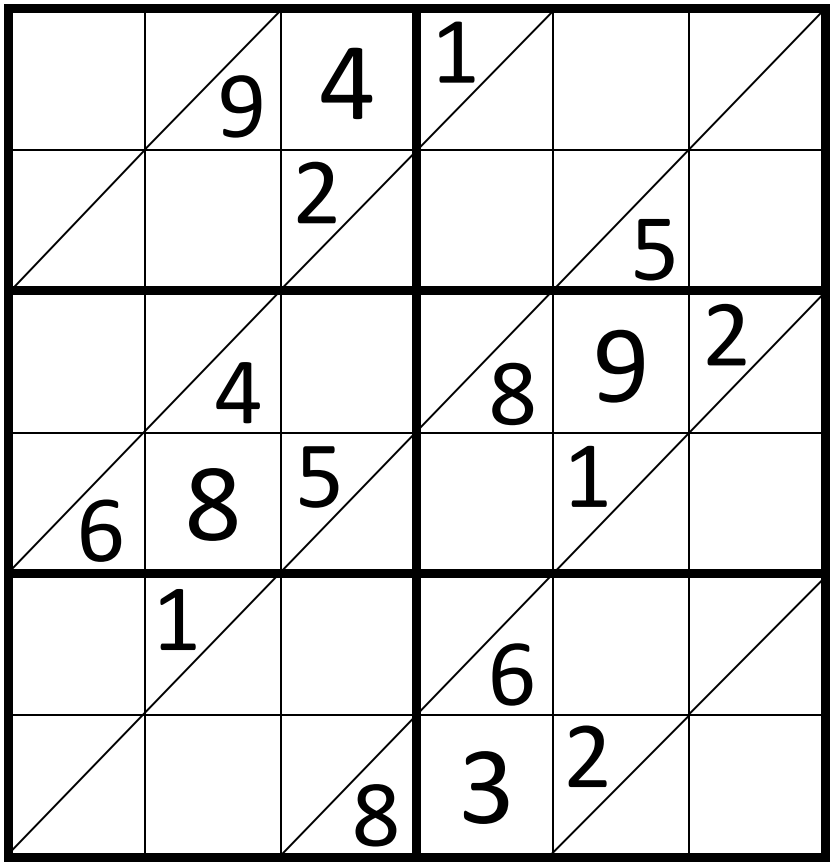
Thropki

Complete the grid so that each row, column and 3x3 box contains the digits 1-9. Neighbouring cells containing digits with a difference of 3 are marked with a white triangle. Neighbouring cells containing digits with a quotient of 3 are marked with a black triangle. All possible triangles are given.



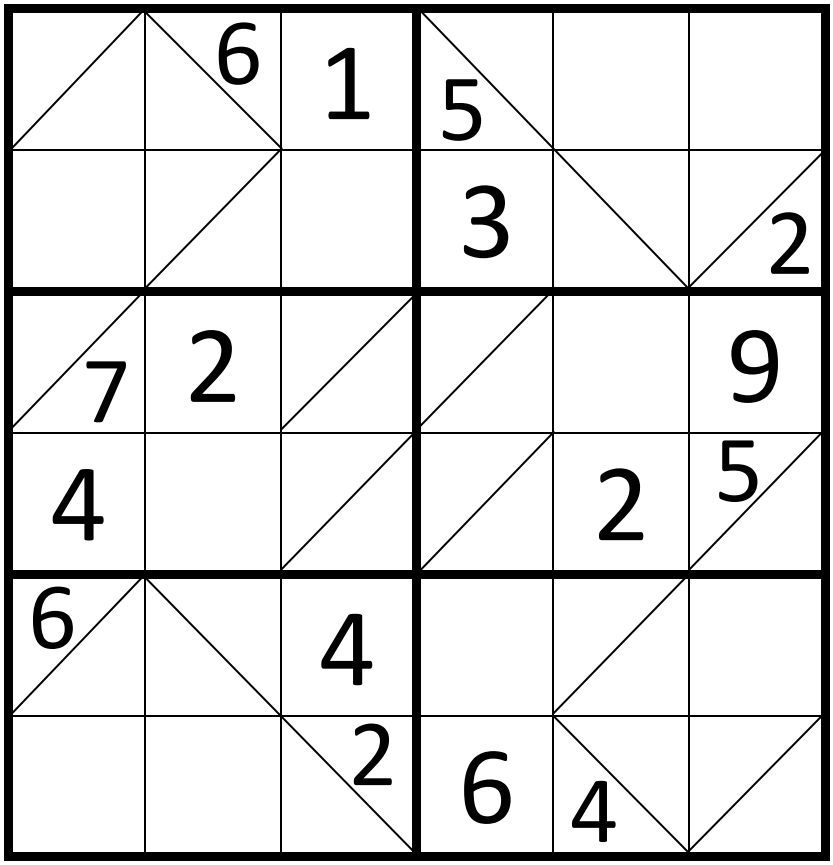
Tight Fit

Complete the grid so that each row, column and 2x3 box contains the digits 1-9. In addition, within each square which is subdivided into two triangles, the smaller digit must lie above the larger digit.



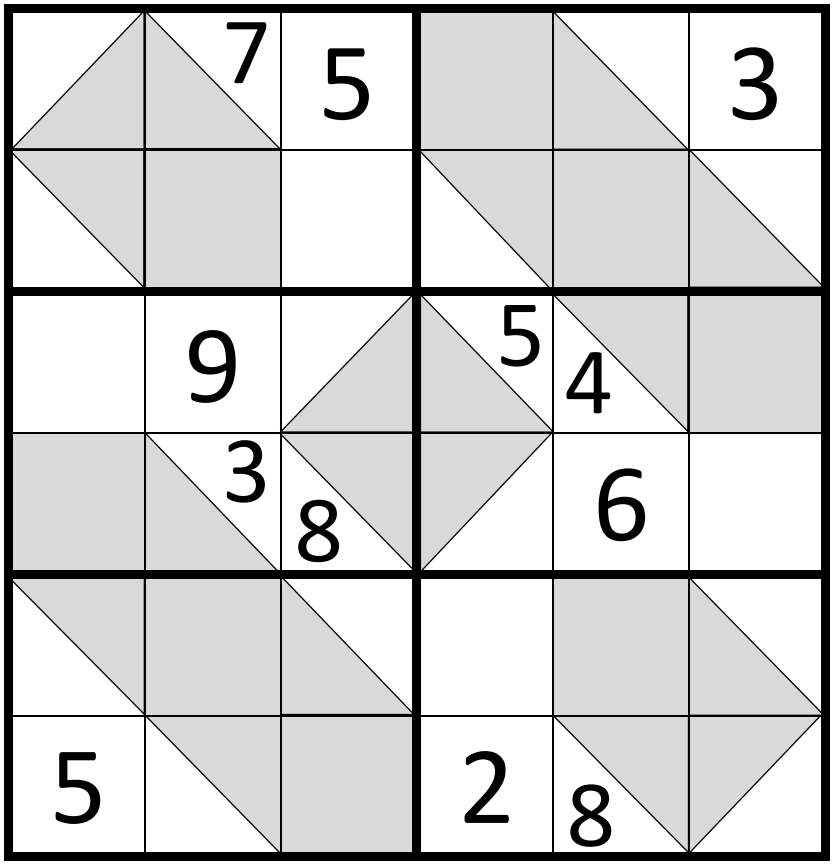
Non-Consecutive Squeeze

Complete the grid so that each row, column and 2x3 box contains the digits 1-9. In addition, cells sharing an edge must not contain consecutive digits. The Tight Fit constraint about smaller digits having to lie above larger digits in split squares does not apply.



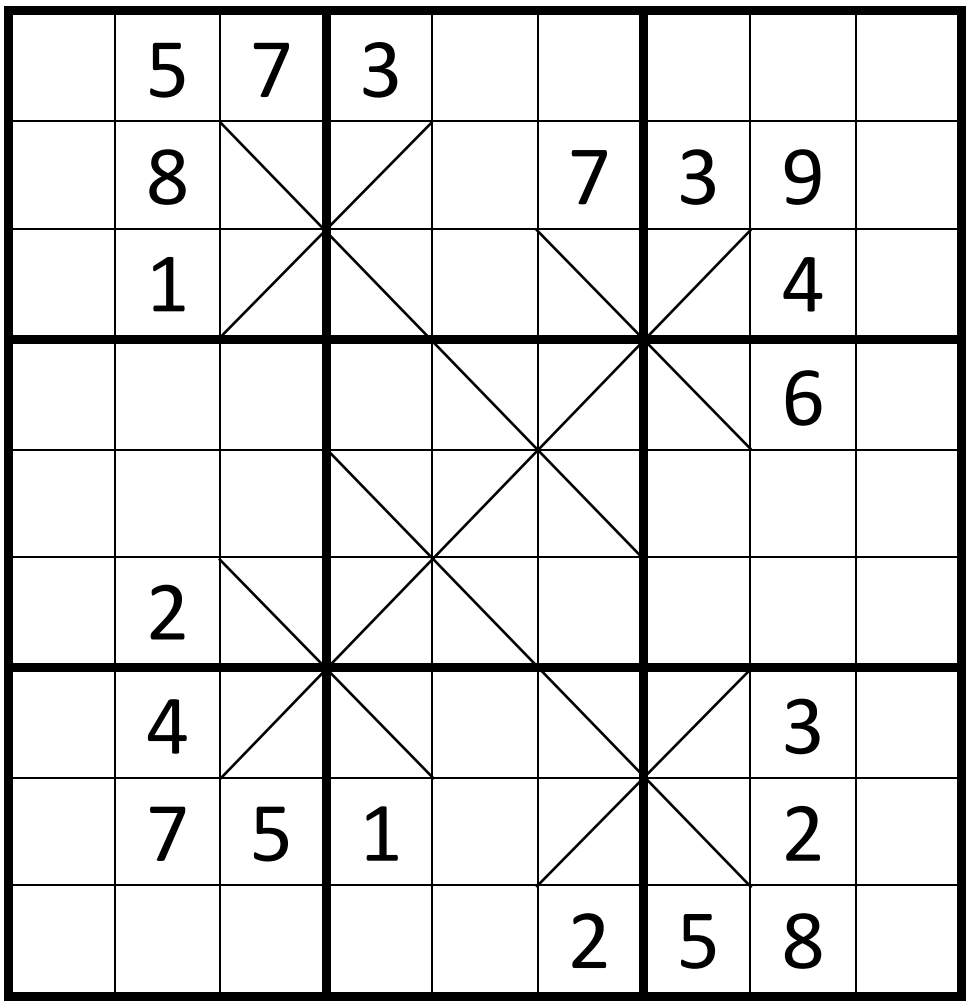
Renban Squeeze

Complete the grid so that each row, column and 2x3 box contains the digits 1-9. In addition, each shaded region must contain a set of consecutive digits. The Tight Fit constraint about smaller digits having to lie above larger digits in split squares does not apply.



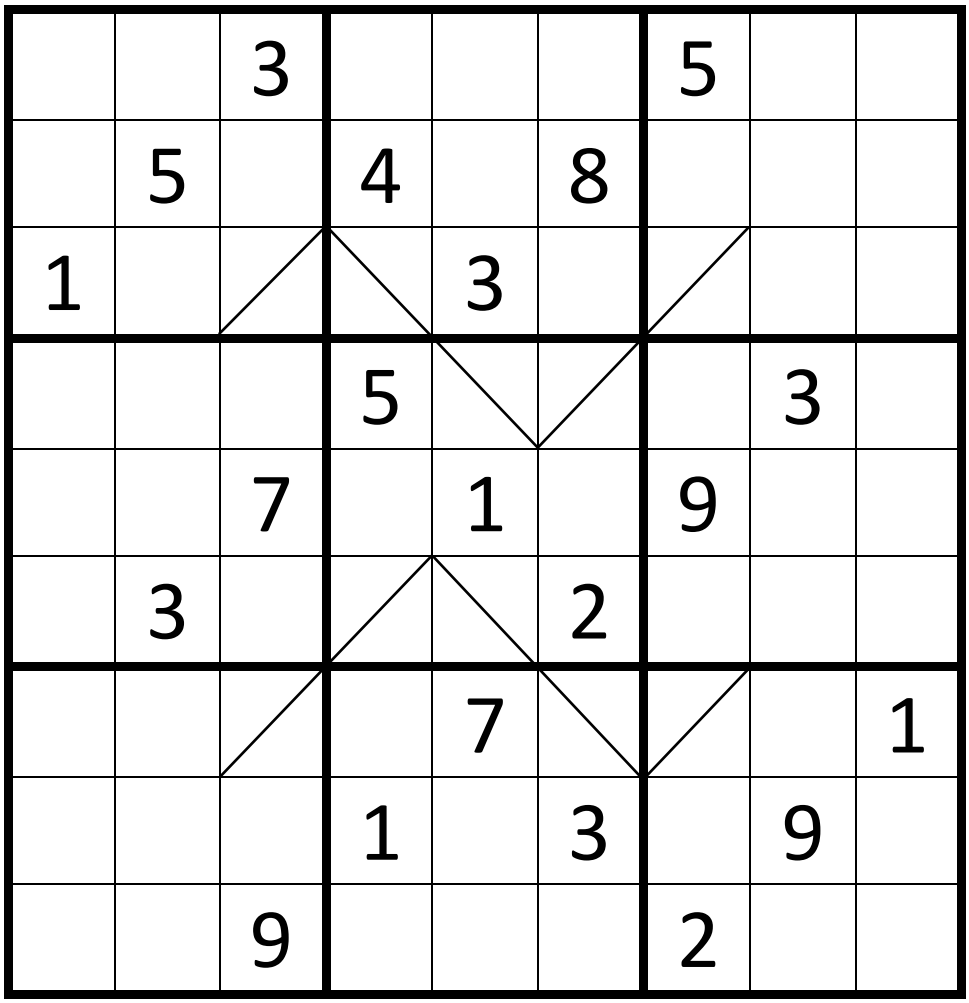
Triangular Sums

Complete the grid so that each row, column and 3x3 box contains the digits 1-9. In addition, within a square which is split diagonally, one of the triangles must be coloured black. Two black triangles may not share an edge, nor may a black triangle share an edge with the grid boundary. The three digits in the cells surrounding each of the black triangles must add up to a triangular number. The only triangular numbers possible are 6, 10, 15 and 21.



Arrowhead

Complete the grid so that each row, column and 3x3 box contains the digits 1-9. In addition, within a square which is split diagonally, one of the triangles must be coloured black. This triangle acts as a symmetrical arrowhead. The digit placed in the other triangle must equal the sum of the first two digits pointed at by the corresponding arrowhead.



Solutions

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

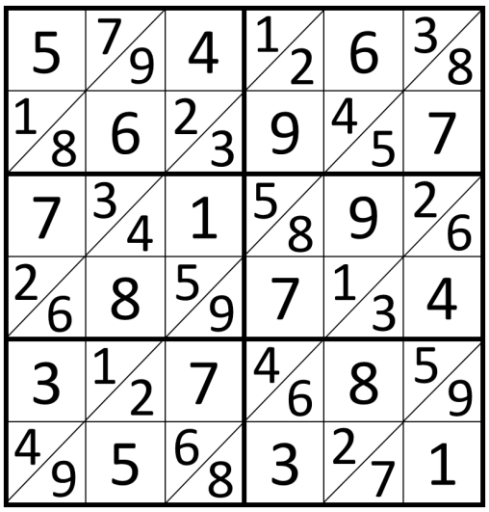
9	5	2	6	7	4	8	3	1
3	6	7	8	1	9	4	2	5
4	8	1	3	5	2	7	6	9
5	4	3	7	6	8	9	1	2
2	1	8	4	9	3	6	5	7
7	9	6	1	2	5	3	8	4
8	2	4	5	3	7	1	9	6
6	7	9	2	8	1	5	4	3
1	3	5	9	4	6	2	7	8

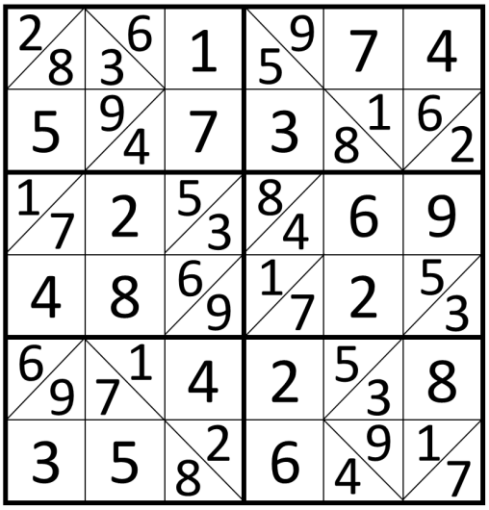
8	7	3	2	1	5	4	9	6
4	2	5	6	3	9	8	1	7
6	1	9	4	8	7	2	3	5
7	5	2	9	4	6	1	8	3
1	8	6	7	2	3	5	4	9
3	9	4	1	5	8	7	6	2
5	3	1	8	6	2	9	7	4
9	6	8	5	7	4	3	2	1
2	4	7	3	9	1	6	5	8

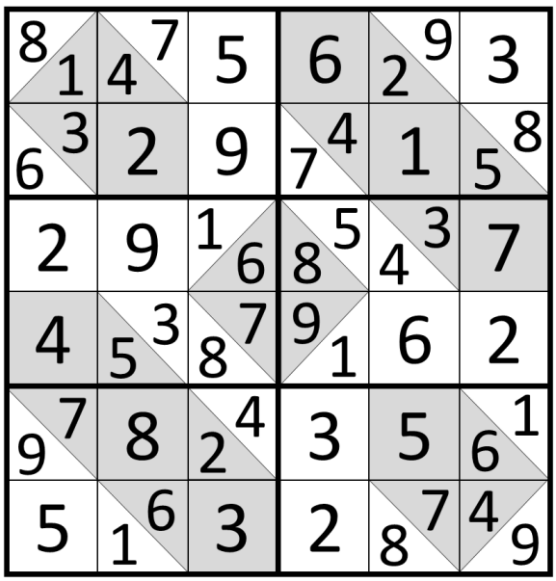
	8	18	19	7	16	22	17	9	19	
14	1	4	9	2	3	7	6	5	8	19
14	5	6	3	4	8	9	2	1	7	10
17	2	8	7	1	5	6	9	3	4	16
15	9	2	4	3	1	5	7	8	6	21
19	8	5	6	9	7	2	1	4	3	8
11	3	7	1	6	4	8	5	2	9	16
9	4	3	2	7	6	1	8	9	5	22
23	6	9	8	5	2	4	3	7	1	11
13	7	1	5	8	9	3	4	6	2	12
	17	13	15	20	17	8	15	22	8	

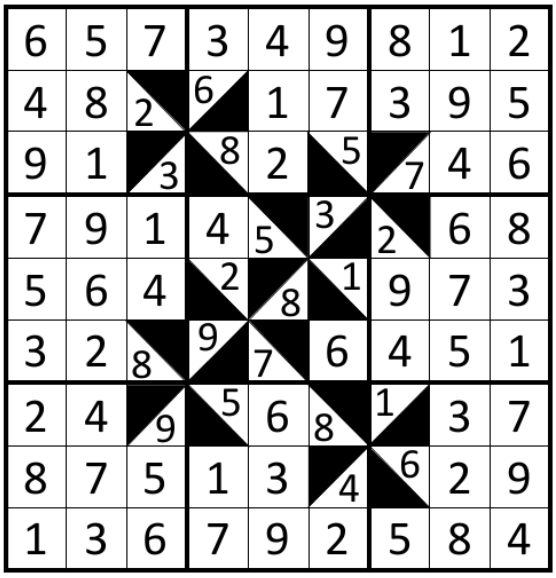
		8	22	8	22	8			
	6	7	5	3	8	1	9	4	2
	3	9	2	5	7	4	1	8	6
17	4	8	1	6	9	2	5	7	3
10	8	1	6	7	5	3	2	9	4
20	2	4	3	9	1	6	7	5	8
10	9	5	7	2	4	8	3	6	1
17	7	2	8	4	3	5	6	1	9
	5	3	4	1	6	9	8	2	7
	1	6	9	8	2	7	4	3	5

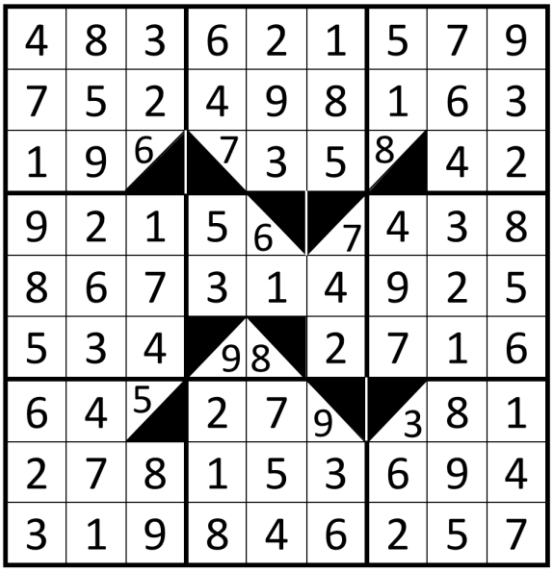
4	9	2	5	6	7	1	8	3
3	7	1	9	8	4	5	6	2
5	8	6	3	2	1	4	9	7
2	1	8	6	9	3	7	5	4
6	5	3	4	7	8	9	2	1
7	4	9	2	1	5	6	3	8
8	3	5	1	4	9	2	7	6
9	2	4	7	3	6	8	1	5
1	6	7	8	5	2	3	4	9


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


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


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


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


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