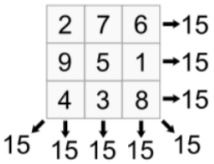
APSU Math Problem of the Week

Problem #6: Quasi-Magic Sudoku

Submission Deadline: 10/8/2021 by 12pm to
Dr. Brad Fox in **MMCS 109** or by email to **foxb@apsu.edu**



A 3×3 magic square, such as the example to the right, uses the numbers 1 to 9 such that all three rows, all three columns, and the two diagonals add up to 15. It's been proven that you can't create a sudoku puzzle where all nine of the 3×3 grids are magic squares, and in fact, you can't even make the sums stay between 14 and 16. However, there are nearly 250,000 ways to make a sudoku puzzle (following the usual rules of using 1 through 9 exactly once in each row, column, and 3×3 grid) where within each 3×3 grid, the three numbers in each row, column, and diagonal add to a sum between 13 and 17. Solve the puzzle below that satisfies this restriction in each the nine 3×3 grids.

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

Feel free to take this printout, or find each Problem of the Week by scanning this:

Complete the problem each week for a chance to win a prize

Rules:

1. Any APSU student can submit a solution individually, or work can be done in a small group of 2 or 3 students.
2. Solutions must be justified when appropriate to be considered correct. (though not on this one)
3. Submissions can be made to Dr. Brad Fox (MMCS 109) or electronically to foxb@apsu.edu
4. Problems will be posted each Friday afternoon with submissions due by the following Friday at 12pm. Solutions and the weekly winner will be posted once the deadline has passed.
5. One correct submission (whether submitted individually or as a group) will be randomly chosen to win a prize such as gift cards, Galois Math Club t-shirts, and APSU CoSTEM swag, in addition to receiving the glory of having their success published on this webpage.
6. Faculty and other non-students can submit solutions, but are not eligible for prizes.