UW Math Circle
January 16th, 2019

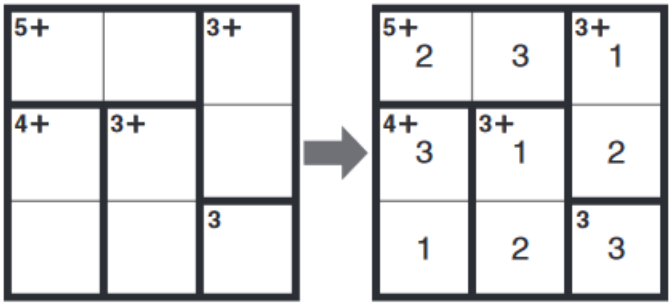
Warmups

Ken Ken!

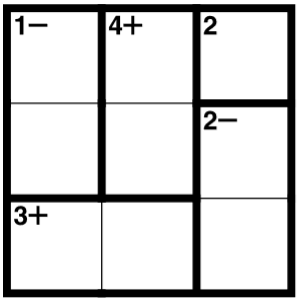
Ken Ken is a number puzzle played on square - say $n \times n$ - grid. The grid is partitioned into 'cages', which are initially empty. Each cage has an addition, subtraction, multiplication, or division rule. Your goal is to fill in the squares with integers 1 through n such that:

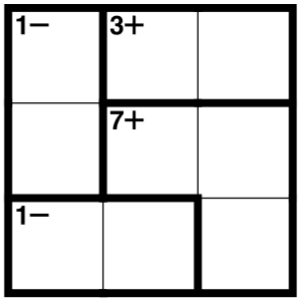
- The rule in each cage is satisfied by the numbers inside it. For example, in a 4×4 puzzle, if a cage has two squares with the rule $2-$, it must either have a 1 and a 3 or a 2 and a 4.
- No number appears twice in any row or column (every number 1 through n appears exactly once)

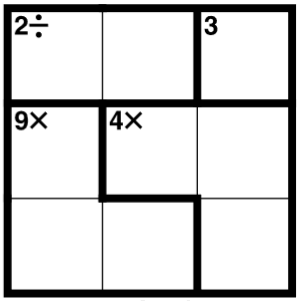
Here is a 3×3 example.



All these puzzles have unique solutions. Try to find the solution by making one logical deduction at a time.







More puzzles: