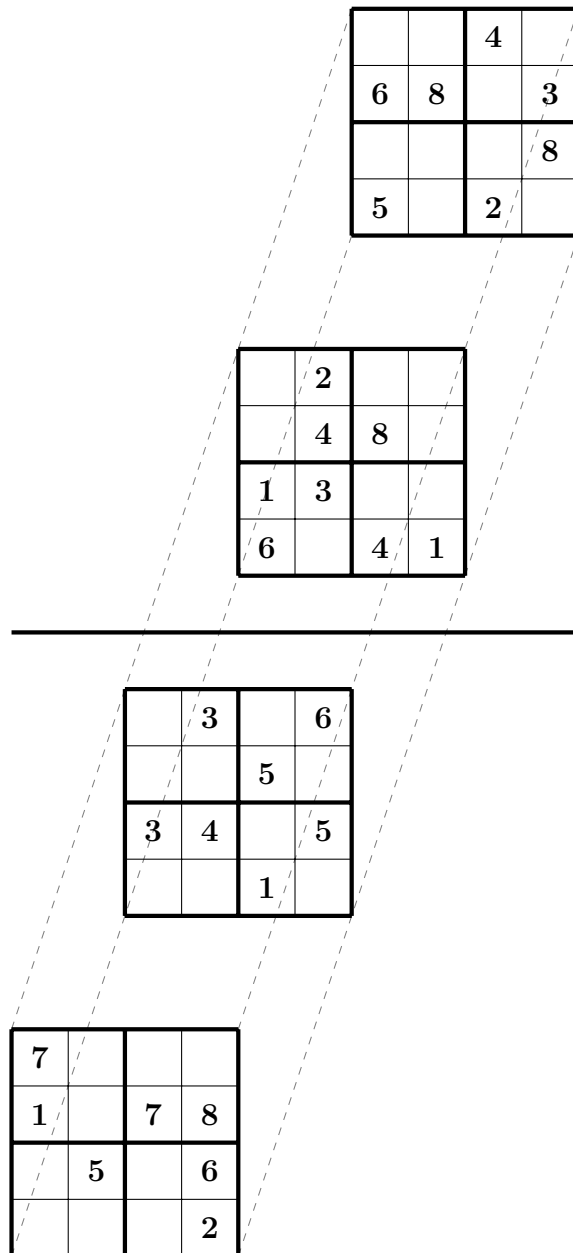# Sudocube: An Experimental 3D Sudoku Puzzle
A puzzle by Cyrus Cousins

Place a digit from 1 through 8 into each cell of the $4 \times 4 \times 4$ grid. Digits may not repeat within the 8 nonoverlapping $2 \times 2 \times 2$ cubes, nor may they repeat along any of the x, y, or z axes.

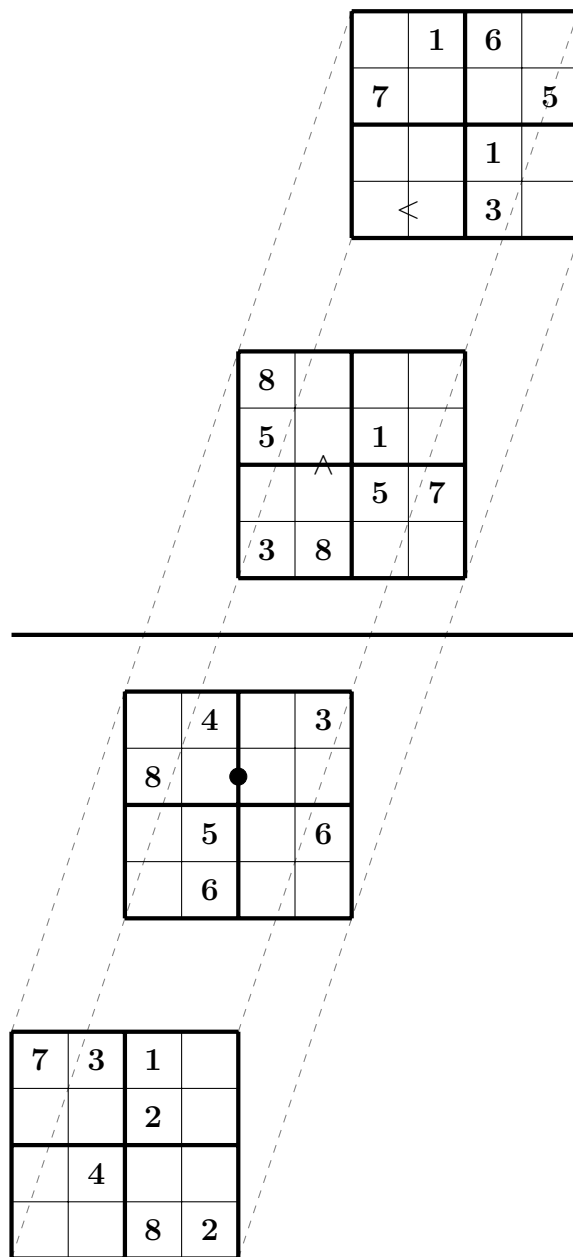# Domino Sudocube: An Experimental 3D Variant Sudoku
A puzzle by Cyrus Cousins

Place a digit from 1 through 8 into each cell of the $4 \times 4 \times 4$ grid. Digits may not repeat within the 8 nonoverlapping $2 \times 2 \times 2$ cubes, nor may they repeat along any of the x, y, or z axes.

Standard domino sudoku rules apply: inequality signs between adjacent cells require that the digits placed in said cells respect the inequality, and solid Kropki dots (filled circles) require the digit placed in one adjacent cell to be twice the digit of the other. For visual clarity, all given dominos are orthogonal to the z axis.

Hints and Tips for Solving the Sudocube

1. Consider the digits that are ruled out along all three axes, and within the cube, of every cell. Other standard Sudoku techniques may need to be adapted to work with the third dimension.

2. I recommend starting the puzzle by examining coordinate triplet $(1, 1, 1)$, i.e., (west, south, down).

3. The classic and variant Sudoku puzzles have essentially the same solution, but the x and y axes are transposed, and the numbers are transformed by the (self-dual) mapping $d \mapsto 9 - d$. With this knowledge, you can combine the given clues for the two puzzles. This knowledge is not required to solve either puzzle: use only as a second-to-last resort.

4. If all else fails, contact me for the solutions.