

Sudoku Hints

I know you've seen it in your paper, you may even have played it, but have you truly mastered the art of Sudoku? For me, Sudoku is not just a puzzle, it's an addiction. The purpose of this article is to give you some tips for mastering Sudoku.

The methodology described below I call the "punch out" method. In a nutshell what it does is to write every remaining possible value of each cell within that cell. These are determined by looking at the row, column and square of each cell to "punch out" the invalid values.

Step 1. Look around the cells for obvious solutions. Sometimes there are enough clues given for a value that you can solve some cells.

Step 2. Work through the puzzle filling in the possible values for each cell. There are many ways to accomplish this, I'll introduce two:

1. Cell-by-cell. For each cell look along its row, column and in its square for each value 1-9. If the value isn't already taken then it's a possible for the cell and you annotate it. Continue through all numbers and all cells.
2. For-each-number. Work each number cell by cell. Start with 1 and for each square that doesn't have a 1 in it, determine the cells within it that could contain a 1 and annotate a 1 in there. Continue for each value 2-9.

Once this is complete you will have all the possible values annotated for each "empty" cell. Please note that it is very important to be careful when filling in these values as any mistake here will result in an invalid solution.

Step 3. Use clues within the puzzle to reduce the possibilities for each cell until you can fill in all the vacancies.

1. One Remaining Possible. This occurs when all cell values, except one, are punched out by other cells in the same row, column or square.
2. Only Possible. A related solution technique is to review all numbers 1-9 in each row, column & square looking for a cell that is the only cell in that row, column or square containing that value as a possibility.
3. Twins. When two cells in a row, column or square have exactly the same two remaining possibilities than you have twins. No matter which value is right for one the other value must be correct for the twin cell. This situation enables you to clear out additional possible values along the shared axis.
4. Pointers. When a pair of aligned cells in a square contain the only instances of a possible value for their square. When this occurs you can use the alignment as a pointer to remove that possible from all other cells along the pointed row or column. In short, they point to values that can be removed.
5. Reverse Pointers. A related situation occurs when only 1 square has a possible value for a given row or column allowing you to eliminate that value as a possible for the other cells within the square. Rather than allowing us to solve a cell this reduces the number of

possibilities for 1 or more cells. I refer to this as a reverse pointer because they don't point out to a row or column but rather back into their square.

The clues given above are sufficient to solve nearly all puzzles if you are very careful and systematic in following them. Once in a while, I've been forced to guess in the very hardest puzzles. In these rare cases, I circle all values I select from that point on so that I can reset the puzzle if I find a conflict and have to guess another value.

Good luck and enjoy the challenge!

James Bray

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