



Simple Sudoku 9*9

Lesson Plan: Class 06 / LCR / 02



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| Overall goal of the lesson | Solving simple Sudoku 9x9 with some techniques |
| Prior knowledge required | Sudoku in earlier classes |

MODULE 1: **Module time:** 50 minutes

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| Goal: | Solving simple 9x9 Sudoku puzzles |
| Description: | Children will learn about how Sudoku 9x9 look, simple techniques to solve the puzzle. With an example learning about the applying the learnt techniques while solving the puzzle. |
| Material required: | Physical: Writing material, printouts of the work sheet Electronic: None |
| Procedure Details: | <ol style="list-style-type: none"> 1. Start the class by talking to the children about what they know about Sudoku puzzles. In earlier classes they should learnt about Sudoku puzzles. 2. The rules for solving the puzzle can be reiterated. In 9x9 Sudoku we need to fill with digits 1 to 9 such that each of these 9 digits appears in each row, each column, each 3x3 sub-grid or the square once and only once. 3. Refer slide 4 and 5 and show how the 9x9 Sudoku looks with some digits already in place. Reiterate about the 'rows', 'columns' and 'sub-grids/squares'. There will be 9 sub squares. 4. There are some techniques that can be used for resolving the puzzle in a systematic way. The simple ones can be filled by just the elimination method. That is eliminate the impossibility of digit being in a particular cell. 5. For the difficult ones the techniques will help. There are simple and advance techniques, since our goal is to solve simple Sudoku lets look at the simple techniques. 6. Please refer the slides 8 to 12 to understand the Hidden Single, Locked Candidate, Sole Candidate techniques. Explain each technique with an example given. We will see how to apply these while solving the puzzle later. 7. Removing the possibility of cell hosting a candidate is another method and explain the techniques on removing candidates with example given in slide 13 and 14. 8. Other than the basic techniques there are advanced techniques when there are multiple right candidates for a cell. 9. Give the children other tips like coloring cells with their convenient color coding method and proceed, writing the subset of right candidates. 10. The explained techniques are just tips to give the children a hint to solve the puzzle. They can come up with their own technique to solve faster. 11. Refer slide 16 for the Sudoku that has to be solved. We are trying to explain the children about how to apply the above learnt techniques while solving. <ol style="list-style-type: none"> a. Once again explain the children about sub-squares, rows and columns. Explain the exact numbering as well for squares (From S1 till S9), rows (R1 till R9) and columns (C1 till C9) b. Explain how to identify the cell with (row, column) coordinates. Ex: S2 (R2, C5) is the cell which is on second row and on fifth column in square 2. |

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| | <ul style="list-style-type: none"> c. Ask the children to write down the puzzle and fill as you explain. This way they would be able to understand better. d. The digits that are in GREEN color are the given digits e. In this method we are starting with digit 1 and trying to find the right cell for each square by applying Hidden Single method. Each digit is in different color code. f. Also get the clues about right cells for a candidate by using the Locked Single method. Since this will give us the exact position the decision has to be postponed. g. Show the grids for Sole Candidates as given in Slide 18 h. After slide 18 ask the children to identify the right candidates with the remaining digits 7,8,9 i. By now most of the cells are filled and with removing techniques children can fill the empty cells. Give them a chance to complete the remaining cells. j. Once their attempt to complete the puzzle is over go to slide 19 show the completed Sudoku. k. Please tell them again that these are NOT the only methods to solve. These are just the clues and the can figure out the methods that fits them. l. Happy SUDOKU. So the next time you see a Sudoku in news paper you will not leave that empty. |
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Assessments: please refer the below assessments with solutions for teacher's reference.

Assessment 1: Puzzle

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
|----|----|----|----|----|----|----|----|----|----|
| R1 | | 6 | 2 | | 8 | | 4 | 3 | |
| R2 | 9 | 8 | | 1 | 3 | | | | 7 |
| R3 | 5 | | | | 2 | | | | 9 |
| R4 | 3 | | 1 | 8 | | 4 | | 5 | |
| R5 | 6 | | | | | 2 | 9 | | |
| R6 | | 5 | 8 | 7 | | 1 | | 4 | 6 |
| R7 | 1 | | | 9 | 7 | | 6 | 8 | |
| R8 | 4 | 3 | | 6 | | | 2 | | |
| R9 | | 7 | | | | 5 | 1 | | 3 |

Assessment 1: Solution

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
|----|----|----|----|----|----|----|----|----|----|
| R1 | 7 | 6 | 2 | 5 | 8 | 9 | 4 | 3 | 1 |
| R2 | 9 | 8 | 4 | 1 | 3 | 6 | 5 | 2 | 7 |
| R3 | 5 | 1 | 3 | 4 | 2 | 7 | 8 | 6 | 9 |
| R4 | 3 | 9 | 1 | 8 | 6 | 4 | 7 | 5 | 2 |
| R5 | 6 | 4 | 7 | 3 | 5 | 2 | 9 | 1 | 8 |
| R6 | 2 | 5 | 8 | 7 | 9 | 1 | 3 | 4 | 6 |
| R7 | 1 | 2 | 5 | 9 | 7 | 3 | 6 | 8 | 4 |
| R8 | 4 | 3 | 9 | 6 | 1 | 8 | 2 | 7 | 5 |
| R9 | 8 | 7 | 6 | 2 | 4 | 5 | 1 | 9 | 3 |

Assessment 2: Puzzle

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
|----|----|----|----|----|----|----|----|----|----|
| R1 | | | 2 | 7 | | 3 | 8 | | |
| R2 | 3 | | | | | 2 | | | 5 |
| R3 | | 9 | | | 6 | | | 7 | |
| R4 | 4 | 6 | | 2 | | | | | 3 |
| R5 | | | | | | 8 | 2 | | 1 |
| R6 | 8 | | | 3 | | | 4 | | 9 |
| R7 | 9 | | 7 | 8 | | | | 2 | |
| R8 | | 5 | | 4 | | | 1 | | |
| R9 | | | | | 5 | 1 | 6 | | |

Assessment 2: Solution

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
|----|----|----|----|----|----|----|----|----|----|
| R1 | 5 | 4 | 2 | 7 | 9 | 3 | 8 | 1 | 6 |
| R2 | 3 | 7 | 6 | 1 | 8 | 2 | 9 | 4 | 5 |
| R3 | 1 | 9 | 8 | 5 | 6 | 4 | 3 | 7 | 2 |
| R4 | 4 | 6 | 5 | 2 | 1 | 9 | 7 | 8 | 3 |
| R5 | 7 | 3 | 9 | 6 | 4 | 8 | 2 | 5 | 1 |
| R6 | 8 | 2 | 1 | 3 | 7 | 5 | 4 | 6 | 9 |
| R7 | 9 | 1 | 7 | 8 | 3 | 6 | 5 | 2 | 4 |
| R8 | 6 | 5 | 3 | 4 | 2 | 7 | 1 | 9 | 8 |
| R9 | 2 | 8 | 4 | 9 | 5 | 1 | 6 | 3 | 7 |

Assessment 3: Puzzle

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
|----|----|----|----|----|----|----|----|----|----|
| R1 | | | | | | | 1 | | 9 |
| R2 | | | | | | 8 | | | 7 |
| R3 | 7 | | | | | 2 | | | |
| R4 | 8 | 1 | | | | | 5 | | 6 |
| R5 | 5 | | | | | | | | |
| R6 | | 3 | 9 | | | | 8 | | |
| R7 | | | 8 | | 9 | 6 | | | 4 |
| R8 | | | | 3 | | | | | |
| R9 | | 9 | | 7 | 4 | | | | 2 |

Assessment 3: Solution

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
|----|----|----|----|----|----|----|----|----|----|
| R1 | 6 | 8 | 3 | 5 | 7 | 4 | 1 | 2 | 9 |
| R2 | 9 | 2 | 5 | 1 | 6 | 8 | 4 | 3 | 7 |
| R3 | 7 | 4 | 1 | 9 | 3 | 2 | 6 | 5 | 8 |
| R4 | 8 | 1 | 7 | 4 | 2 | 3 | 5 | 9 | 6 |
| R5 | 5 | 6 | 4 | 8 | 1 | 9 | 2 | 7 | 3 |
| R6 | 2 | 3 | 9 | 6 | 5 | 7 | 8 | 4 | 1 |
| R7 | 3 | 5 | 8 | 2 | 9 | 6 | 7 | 1 | 4 |
| R8 | 4 | 7 | 2 | 3 | 8 | 1 | 9 | 6 | 5 |
| R9 | 1 | 9 | 6 | 7 | 4 | 5 | 3 | 8 | 2 |