

AIM No. \_\_\_\_

How can we use logic to solve sudoku puzzles?

DO-NOW No. \_\_\_\_

Write on the board or overhead:

Find the missing number(s) in each set:

Problem 1	1	2	3	4	6	7	8	9	(answer = 5)
Problem 2	9	7	3	1	2	4	6	5	(answer = 8)
Problem 3	2	8	6	3	9	5	4		(answer = 1, 7)

## MATERIALS

overhead projector  
dry erase marker(s)  
handouts

- *Sudoku Worksheet No. 1*
- *Sudoku Worksheet No. 2*
- *Sudoku Worksheet No. 3*
- *Sudoku Worksheet No. 4*
- *Sudoku Worksheet No. 5*
- *Sudoku Worksheet No. 6*

transparencies

- *Transparency No. 1 — Completed Sudoku*
- *Transparency No. 2 — Sudoku Puzzle In Progress*
- *Transparency No. 3 — Sudoku Worksheet No. 1*

*Answers to Sudoku Worksheets*

## VOCABULARY

sudoku — a number puzzle in which the numbers 1 - 9 must be placed into a 9x9 grid so that each number appears only once in each row, each column, and each 3x3 block.

## LESSON

Review the Do-Now. Ask the students how they found their answers. Ask if the order of the numbers made a difference in what the answer was.

The Do-Now is the building block of a logic puzzle called the sudoku (sooh-doe-koooh or sooh-dock-oooh). It gets its name from Japanese: *su* means number and *doku* means single.

What is a sudoku puzzle? (Show *Transparency No. 1 - Completed Sudoku.*) It's a 9x9 grid. You place the numbers from 1 to 9 in the grid so that every row, every column, and every 3x3 block contains all the numbers from 1 to 9 once only. (Invite students to pick any row, column, or block in the sudoku, and check it out.)

The puzzle comes in when some of the cells are filled in and you need to complete the rest. (Show *Transparency No. 2 - Sudoku Puzzle In Progress.* Invite students to work out the empty cells and explain how they arrived at their answers.) Note: *Transparency No. 1* is the answer to the incomplete puzzle in *Transparency No. 2.*

The more cells that are left blank, the harder the puzzle usually is. (Distribute handout *Sudoku Worksheet No. 1* and show *Transparency No. 3 — Sudoku Worksheet No. 1.*) Allow students a few minutes to investigate on their own, then elicit explanations and complete the puzzle as a group on the overhead. Ask if students have any strategies that helped them complete the puzzle. Common tips are:

- Start with sets (rows, columns or blocks) that have the fewest blank cells. If possible, find a set with only one blank cell — than means you can find out the missing number right away.
- If you don't know the answer for a blank cell, but you do know that it has to be one of a small group of possibilities (like 2 or 3 or 4 possibilities), then you can lightly pencil in those possibilities in the cell. Whenever you find another answer in the sudoku, go back and see if it will help you eliminate one of your possible answers.

Once the students understand how to do the puzzles, distribute *Sudoku Worksheet No. 2.* Allow the students to work individually or in groups to complete the puzzles. Distribute other sudoku worksheets as needed, retaining one for homework.

Before the end of class, elicit student reactions to the puzzles. Ask if they were hard, if they learned any new tips or techniques, if they liked the puzzles.

## CONCLUSION

Have the students write a reflection on the following prompt:

Pretend that you are going to teach someone who has never seen a sudoku how to work one of these puzzles. Describe the puzzle and explain how to solve it.

Announce that it will be collected.

HOMEWORK No. \_\_\_\_

Complete Sudoku Worksheet No. \_\_\_\_.