

First name and second name	Team

IF NEEDED, YOU HAVE TO USE TYPICAL GAMS SENTENCES (FOR EXAMPLE, DYNAMIC SETS, ASIGNMENTS OF VALUES OR BOUNDS INSTEAD OF CONSTRAINTS, \$ CONDITIONS, ORD AND CARD, ETC.).

THIS PROBLEM CAN BE PERFECTLY SOLVED WITH THE DEMO LICENSE.

I Statement

PROBLEMA: SUDOKU

Sudoku (Japanese: *sūdoku*), sometimes spelled Su Doku, is a logic-based placement puzzle, also known as Number Place in the United States. The aim of the canonical puzzle is to enter a numerical digit from 1 through 9 in each cell of a 9×9 grid made up of 3×3 subgrids (called “regions”), starting with various digits given in some cells (the “givens”). It cannot be repeated any figure in the same column, row or subgrid.

The term *Sudoku* implies “numbers singly” in Japanese; it is a registered trademark of puzzle publisher Nikoli Co. Ltd in Japan. Other Japanese publishers generally refer to the puzzle as *Nanpure* (*Number Place*), its original title. *Sudoku* is pronounced as the English words “SUE-dough-coo”, with the first syllable accented.

The numerals in *Sudoku* puzzles are used for convenience; arithmetic relationships between numerals are absolutely irrelevant. Any set of distinct symbols will do; letters, shapes, or colours may be used without altering the rules (Penny Press' *Scramblets* and Knight Features Syndicate's *Sudoku Word* both use letters). Dell Magazines, the puzzle's originator, has been using numerals for *Number Place* in its magazines since they first published it in 1979. Numerals are used throughout this article.

(Text taken from <http://en.wikipedia.org/wiki/Sudoku>)

Formulate an optimization problem to solve the following sudoku.

5	3			7				
6			1	9	5			
	9	8					6	
8				6				3
4			8		3			1
7				2				6
	6					2	8	
			4	1	9			5
				8			7	9

II Notation

II.1 Sets

Fill the table with the sets used in the problem formulation

Sets	Meaning

II.2 Parameters

Fill the table with the parameters (data) used in the problem formulation

Parameter	Meaning
M A D R I D	

II.3 Variables

Fill the table with the variables used in the problem formulation

[illegible]

III Formulation

Write the mathematical problem formulation (objective function, constraints and variable bounds)



IV Numerical results

Write in this page the value of the problem variables.