## Take Control of Sudoku

[http://wWW.HyperInfo.CA/Sudoku/](http://wWW.HyperInfo.CA/Sudoku/)

|  |  |  | 3 |  | 4 |  |  | 5 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  | 4 |  |  |  |  | 8 |  |
|  | 2 |  |  | 9 |  |  |  | 4 |
| 4 |  |  |  |  | 8 |  |  |  |
|  |  | 3 |  |  |  | 7 |  |  |
|  |  |  | 2 |  |  |  |  | 6 |
| 9 |  |  |  | 4 |  |  | 1 |  |
|  | 6 |  |  |  |  | 3 |  |  |
| 1 |  |  |  |  | 6 |  |  |  |

## 3x3

 SEE Method3-by-3

## Sub-grid

Exhaustive
Elimination

Method

|  | 1 | 9 | 3 | 7 | 4 | 2 | 6 | 5 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 5 |  | 4 | 6 | 2 | 1 | 9 | 8 | 3 |
| 3 | 2 |  | 8 | 9 | 5 | 1 | 7 | 4 |
| 4 | 9 | 2 |  | 6 | 8 | 5 | 3 | 1 |
| 6 | 5 | 3 | 4 |  | 9 | 7 | 2 | 8 |
| 7 | 8 | 1 | 2 | 5 | 3 | 4 | 9 | 6 |
| 9 | 3 | 8 | 5 | 4 | 2 | 6 | 1 | 7 |
| 2 | 6 | 5 | 1 | 8 | 7 | 3 | 4 | 9 |
| 1 | 4 | 7 | 9 | 3 | 6 | 8 | 5 | 2 |

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## Description [Version 0.9]

- Solve 5-Star Sudoku Puzzles with the $3 x 3$ SEE (3-by-3 Sub-grid Exhaustive Elimination) Method!
- The origin of Sudoku can be traced back to Swiss mathematician Leonhard Euler, who devised "Latin Squares" in 1783 , which he described as "a new kind of magic squares". Euler created a grid in which every number or symbol appears once in each row or column.
- Sudoku puzzles were first published in the late 1970 's in Math Puzzles and Logic Problems magazine by Dell Magazines. Dell took Euler's Latin Square concept and applied it to a $9 x 9$ grid with the addition of nine $3 x 3$ boxes, each containing all numbers from 1 to 9 . Dell called the puzzle "Number Place" and still do today.
- There are many excellent on-line tutorials for solving Sudoku puzzles. Here are some examples from which you can learn the concept and basic skills to solve l-star (very easy) to 3-star (medium) Sudoku puzzles.
- Sudoku
[http://en.wikipedia.org/wiki/Sudoku](http://en.wikipedia.org/wiki/Sudoku)
- Sudoku puzzles: how to solve [http://www.sudoku.com/howtosolve.htm](http://www.sudoku.com/howtosolve.htm)
- sudoku tutorial [http://www.kingfeatures.com/features/puzzles/sudoku/tutorial.htm](http://www.kingfeatures.com/features/puzzles/sudoku/tutorial.htm)
- This E-book is meant to give power to the people who want to solve difficult Sudoku puzzles but lack the time to read books with hundreds of pages.
- The concentrated knowledge presented in this E-book will allow you to quickly master the techniques in order to solve 4-star (difficult) to 5star (very difficult) Sudoku puzzles without guessing whatsoever.
- Instead of having a unique solution, some sudoku puzzles have no solution or have multiple solutions.
- Out of hundreds sudoku puzzles published in several newspapers, there has been 0 (zero) Sudoku puzzle that could not be solved by the $3 \times 3$ SEE Method.
- The basic approach of the $3 x 3$ SEE Method is systematic logic and reasoning.

```
- A row refers to a horizontal 9 x 1 matrix.
- A column refers to a vertical 1 x 9 matrix.
- A box refers to a 3 x 3 matrix.
- A cell refers to a spot in which a number is placed.
- A sub-grid refers to a 3 x 3 matrix inside each cell.
```


## How to Play



- This one is a 5-star Sudoku puzzle (very difficult).
- To solve the puzzle, each row, each column, and each box must contain all the numbers 1 through 9.
- The same number must be used only once in each row, in each column, and in each box.


## Scan within Three Rows



1. Focus on the first set of three rows, as shown above.
2. Search for two numbers or one number within the three rows.

- "4" in red circles

3. Find a unique cell in which the selected number can be placed.

- "4" in green

4. Repeat steps 2 through 3 within the three rows.
5. Focus on the second set of three rows and repeat steps 2 through 3.
6. Focus on the third set of three rows and repeat steps 2 through 3.

## Scan within Three Columns



1. Focus on the first set of three columns, as shown above.
2. Search for two numbers or one number within the three columns.

- "4" in red circles

3. Find a unique cell in which the selected number can be placed.

- "4" in green

4. Repeat steps 2 through 3 within the three columns.
5. Focus on the second set of three columns and repeat steps 2 through 3 .
6. Focus on the third set of three columns and repeat steps 2 through 3.

## Get

Stuck

|  |  |  | 3 |  | 4 |  |  | 5 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  | 4 |  |  |  |  | 8 |  |
|  | 2 |  |  | 9 |  |  |  | 4 |
| 4 |  |  |  |  | 8 |  |  |  |
|  |  | 3 | 4 |  |  | 7 |  |  |
|  |  |  | 2 |  |  |  |  | 6 |
| 9 |  |  |  | 4 |  | 6 | 1 |  |
|  | 6 |  |  |  |  | 3 |  |  |
| 1 | 4 |  |  |  | 6 |  |  |  |

- Repeat scanning sets of three rows and sets of three columns because the situation changes when a number is placed in a cell.
- In this example, only two more numbers can be entered by repeating the scanning process.
- The Scanning Method may be enough to solve 1-star (very easy) to 3-star (medium) Sudoku puzzles.
- More difficult ones, such as the 5-star (very difficult) Sudoku puzzle of this example, cannot be solved by the Scanning Method alone.


## Mark Sub-grids



1. Starting with number 1 , examine each cell to see if the number can be placed there, excluding prohibitive zones of the row in which the number belongs, of the column in which the number belongs, and of the box in which the number belongs, as shown above.

- Large "1" in red circles

2. Mark the sub-grid with the number.

- Small "1" everywhere

3. Repeat marking sub-grids with numbers $2,3,4,5,6,7,8$, and 9 .

## Check the Exhaustive Sub-grids

| $78^{6}$ |  | 1   <br>   6 <br> 7 8 9 | 3 | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & & 6 \\ 7 & 8 & \\ \hline \end{array}$ | 4 |  | 2  <br>  6 <br> 7  | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5 3 <br> 7  | $1 \begin{array}{lll}1 & & 3 \\ & 5 & \\ 7 & & 9\end{array}$ | 4 | 1   <br> 7 5 6 | $\begin{array}{lll} 1 & 2 & \\ & 5 & 6 \\ 7 & & \end{array}$ | $\begin{array}{ll} \hline 1 & 2 \\ & 5 \\ 7 & \end{array}$ | $12$ | 8 | $\begin{array}{llll}1 & 2 & 3 \\ 7 & & \\ 7\end{array}$ |
|   3 <br> 5 6  <br> 7 8  | 2 | 1   <br>  5 6 <br> 7 8  | 1   <br>  5 6 <br> 7 8  | $9$ | $\begin{array}{ll} 1 & \\ & 5 \\ 7 & 5 \end{array}$ | 1 |  | 4 |
| 4 | 1   <br>  5  <br> 7  9 | 1 2  <br>  5  <br>  5 6 <br> 7  9 | 1  <br>  5 <br> 7 6 <br> 7  | 1  3 <br> 7 5 6 | 8 | 1 2  <br>  5  <br>   9 | $\begin{array}{ll}2 & 3 \\ 5 & \\ & 9\end{array}$ | $\begin{array}{lll} 1 & 2 & 3 \\ & & \\ & & \\ \hline \end{array}$ |
| 2  <br> 5 6 <br> 8  | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ & 8 & 9 \\ \hline \end{array}$ | 3 | 4 | $1 \begin{array}{lll}1 & \\ & 5 & 6\end{array}$ | $1 \begin{array}{lll}1 & & \\ & 5 & \\ & & 9\end{array}$ | $7$ | $\begin{array}{ll} \hline 2 & \\ 5 & \\ & 9 \end{array}$ | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & 8 & 9 \end{array}$ |
| $\begin{array}{r} \\ \hline\end{array}$ | 1   <br>  5  <br> 7 8  <br> 7 8  | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ 7 & 8 & 9 \end{array}$ | 2 | $7_{7} 5^{3}$ | $1 \begin{array}{lll}1 & & 3 \\ & 5 & \\ 7 & & 9\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & & \\ 4 & 5 & \\ & 8 & 9 \end{array}$ | $455^{3}$ | 6 |
| 9 | ${ }^{7}{ }^{5} 8$ | $\begin{array}{r} 2 \\ 5 \\ 78 \end{array}$ | 5 78 | 4 | 2 3  <br> 7   | $6$ | $1$ | $\begin{array}{r} 2 \\ 78 \end{array}$ |
| $\begin{array}{r} \\ \hline 2 \\ 5 \\ 7 \quad 8 \\ \hline\end{array}$ | 6 | 2 5 78 | 1   <br>  5  <br> 7 8 9 | $\begin{array}{rr}1 & 2 \\ & 5 \\ 7 & 8\end{array}$ | 1 2  <br>    <br>  5  <br> 7   | 3 | \|lll| |  2 <br> 7 8 |
| 1 | 4 | 2 5 $7 \quad 8$ | $\begin{array}{lll} & 5 \\ 7 & 8 & 9\end{array}$ | 2 3 <br> 5  <br> 7 8 | 6 | $\begin{array}{ll\|} \hline 2 & \\ 5 & \\ 8 & 9 \end{array}$ | 2  <br>  5 <br> 7 9 |  |

- Sub-grid marking is time-consuming and requires self-discipline. High quality sub-grids are essential for solving the puzzle. Therefore, it is highly recommended that you double-check the numbers in the sub-grids.
- There is a website that automatically generates Exhaustive Matrix online. The printable Exhaustive Matrix is correct by construction.
- Sudoku
[http://www.HyperInfo.CA/Sudoku/](http://www.HyperInfo.CA/Sudoku/)
- The puzzle is now ready for the $3 \times 3$ SEE Method.

Identify Single Numbers -> Eliminate!


1. If there is a single number in any cell anywhere, then select the number, as shown above.

- Small "1" in green circle

2. Eliminate the number within the row to which the number belongs, within the column to which the number belongs, and within the box to which the number belongs.

- Small "1" in red Xs

Identify Unique Numbers within a Row -> Eliminate!


1. Focus on one row, as shown above.
2. If there is a unique number in any cell within the row, then select the number.
```
\circ Small "3" in green circle in row 9
```

3. Eliminate the number within the column to which the number belongs, and within the box to which the number belongs.

- Small "3" in red Xs

4. Repeat steps 2 through 3 in all nine rows.

Identify Unique Numbers within a Column -> Eliminate!


1. Focus on one column, as shown above.
2. If there is a unique number in any cell within the column, then select the number.

- Small "3" in green circle in column 6

3. Eliminate the number within the row to which the number belongs, and within the box to which the number belongs.

- Small "3" in red Xs

4. Repeat steps 2 through 3 in all nine columns.

Identify Unique Numbers within a Box -> Eliminate!

| $78^{6}$ | $\begin{array}{\|lll} \hline 1 & & \\ 7 & 8 & 9 \end{array}$ |  | 3 |  | 4 | - $\begin{array}{rr}2 & \\ \\ & 9\end{array}$ | 7 | 6 9 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\square$ | $\begin{array}{lll} 1 & & 3 \\ & 5 & \\ 7 & & 9 \end{array}$ | 4 |  | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & 5 & 6 \\ 7 & & \\ \hline \end{array}$ | $\begin{array}{\|ll\|} \hline 1 & 2 \\ & 5 \\ 7 & \\ \hline \end{array}$ |  |  |  | $\begin{array}{r}* \\ \hline\end{array}$ |
|   <br>   <br> 7 6 <br> 7 8 | 2 |  <br>  <br> 7 <br> 7 | $\begin{array}{\|rr\|} * & 5 \\ 7 & 6 \\ 7 & 8 \\ \hline \end{array}$ | 9 | ${ }^{*} 5$ | $1$ | 7 | 3 | 4 |
| 4 | $\begin{array}{lll}1 & & \\ & 5 & \\ 7 & & 9\end{array}$ | 1 2  <br>  5 6 <br>  5  <br> 7  9 |  | $\begin{array}{lll}1 & & 6 \\ 7 & 5\end{array}$ | 8 | - $2 \begin{array}{ll} \\ 5 & \\ & \\ & 9\end{array}$ |  | 2 3 <br> 5  <br>  9 | $\begin{array}{\|lll} \hline 1 & 2 & 3 \\ & & \\ \hline \end{array}$ |
| $\begin{array}{ll} \hline 2 & \\ 5 & 6 \\ 8 & \\ \hline \end{array}$ | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ & 8 & 9 \\ \hline \end{array}$ | 3 | 4 | $1 \begin{array}{ll}1 \\ & 56\end{array}$ | $1 \begin{array}{lll}1 & & \\ & 5 & \\ & & 9\end{array}$ | 7 |  | 9 | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & 8 & 9 \end{array}$ |
| 5 78 | $\begin{array}{llll}1 & & \\ & 5 & \\ 7 & 8 & 9\end{array}$ |  | 2 | ${ }_{7}{ }^{5}$ | 3 |  |  | 9 | 6 |
| 9 | ${ }^{7} 5^{3} 8$ | $\begin{array}{r} 2 \\ 5 \\ 78 \end{array}$ | 5 78 | 4 | 2 7 | 6 |  |  | $\begin{array}{r} 2 \\ 78 \\ 78 \end{array}$ |
| $\begin{array}{r} 2 \\ 5 \\ \hline 78 \\ \hline \end{array}$ | 6 | $\begin{array}{r} 2 \\ 5 \\ \hline 78 \\ \hline \end{array}$ | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ \hline 7 & 8 & 9 \end{array}$ | $\begin{array}{\|ll} 1 & 2 \\ & 5 \\ \hline 7 & 8 \\ \hline \end{array}$ | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & 5 & \\ \hline 7 & & 9 \end{array}$ |  |  | 9 |  2 <br> 788  |
| $1$ | 4 | 2 5 78 | $\begin{array}{lll} & 5 \\ 7 & 8 & 9\end{array}$ | 3 | $6$ | $\begin{array}{ll} \hline 2 & \\ 5 & \\ 8 & 9 \\ \hline \end{array}$ |  |  |  2  <br> 7 8 9 |

1. Focus on one box, as shown above.
2. If there is a unique number in any cell within the box, then select the number.
```
0 Small "4" in green circle in box 9
```

3. Eliminate the number within the row to which the number belongs, and within the column to which the number belongs.

- Small "4" in red Xs

4. Repeat steps 2 through 3 in all nine boxes.

## Use the Double Technique -> Eliminate!



1. Focus on one row, on one column, or on one box, as shown above.
2. Within the row, within the column, or within the box, identify two cells, each containing two identical numbers only.

- Small "2" and "9" in blue circles

3. Eliminate any of the two numbers in other cells within the row, within the column, or within the box.

- Small "2" and "9" in red Xs

4. Select a single number each in the cells, if possible.

- None
- The Double Technique may not be required for less difficult puzzles.


## Use the Triple Technique -> Eliminate!

| $78^{6}$ | $\begin{array}{lll}1 & \\ \\ 7 & 8 & 9\end{array}$ |  | 3 | $\begin{array}{lll} 1 & 2 & \\ & & 6 \\ 7 & 8 & \end{array}$ | 4 | - $2 \times 1$ | 2 <br>  <br> 7 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 56 7 | $1{ }^{1} \times 15$ | 4 | 1 5  <br> 7   | $\begin{array}{\|ll\|} \hline 1 & 2 \\ & 5 \end{array} 6$ | $\begin{array}{\|ll\|} \hline 1 & 2 \\ & 5 \\ 7 & \\ \hline \end{array}$ | $\text { - } 2$ <br> 9 | 8 | +23 7 |
|   <br>  3 <br> 7 8 | 2 |  | ${ }^{\bullet} \begin{array}{ll}  & \\ & 5 \end{array}$ | $9$ | ${ }^{*} 5$ | $1$ | 3 <br> 7 <br> 7 | 4 |
| 4 |  | 1 2  <br>  5 6 <br> 7  9 | 1   <br>  5 6 <br> 7  9 | ${ }^{1}$ | 8 | - $\begin{array}{ll}2 & \\ 5 & \\ & 9\end{array}$ | $\begin{array}{ll}2 & 3 \\ 5 & \\ & 9\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & 2 & 3 \\ & & \\ & & 9 \end{array}$ |
| $\begin{array}{ll}2 \\ 5 & 6 \\ 8\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ & 8 & 9 \end{array}$ | 3 | 4 | $1 \begin{array}{lll}1 & \\ & 5 & 6\end{array}$ | $1 \begin{array}{lll}1 & & \\ & 5 & \\ & & 9\end{array}$ | $7$ | $\begin{array}{ll} \hline 2 & \\ 5 & \\ & 9 \end{array}$ | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & & \\ & 8 & 9 \end{array}$ |
| $\begin{array}{r}5 \\ 78 \\ \hline\end{array}$ | $\begin{array}{\|lll\|}1 & & \\ & 5 \\ 7 & 8 & 9\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ 7 & 8 & 9 \\ \hline \end{array}$ | 2 | $7_{7}^{1} 5$ | 3 | $\left\lvert\, \begin{array}{lll}\bullet & & \\ 4 & & \\ & \cdot & 9\end{array}\right.$ | $\cdots{ }^{5}$ | 6 |
| 9 | ${ }_{7} 5^{3} 8$ | $\begin{array}{r} 2 \\ 5 \\ 78 \end{array}$ | 5 78 | 4 | $\begin{aligned} & 2 \\ & 5 \end{aligned}$ | $6$ | $1$ | (2) |
| $\begin{array}{r}2 \\ 5 \\ 78 \\ \hline\end{array}$ | 6 | 2 5 78 | 1   <br>  5  <br> 7 8 9 | $\begin{array}{rr}1 & 2 \\ & 5 \\ 7 & 8\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & 5 & \\ 7 & & 9 \end{array}$ | $3$ | 4 |  |
| $1$ | 4 | 2 5 7 | $7 \begin{aligned} & 5 \\ & 7\end{aligned}$ | 3 | 6 | $8$ |  |  |

1. Focus on one row, on one column, or on one box, as shown above.
2. Within the row, within the column, or within the box, identify three cells, each containing two or three identical numbers only.

- Small "2", "7" and "9" in blue circles

3. Eliminate any of the three numbers in other cells within the row, within the column, or within the box.

- Small "2", "7" and "9" in red Xs

4. Select a single number each in the cells, if possible.

- Small "5" in green circles
- The Triple Technique may not be required for less difficult puzzles.


## Use the Extend Technique -> Eliminate!

| $78^{6}$ | $\begin{array}{\|llll} \hline 1 & & \\ 7 & 8 & 9 \end{array}$ |  | 3 |  | 4 | - $2 \times r$ |  | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{array}{r}3 \\ 7 \\ \hline\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & & 3 \\ & 5 & \\ 7 & & 9 \\ \hline \end{array}$ | 4 | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & 6 \\ 7 & & \\ \hline \end{array}$ |  | $\begin{array}{\|ll\|} \hline 1 & 2 \\ & 5 \\ 7 & \\ \hline \end{array}$ | $\text { . } 2$ | 8 | +23 7 |
|   <br>  3 <br> 78 8 | 2 | 7 7 | $\left\|\begin{array}{lll} \bullet & 5 & 6 \\ 7 & 8 & \end{array}\right\|$ | 9 | ${ }^{-} 5$ | $1$ | 3 7 | 4 |
| 4 | 1   <br>  5  <br> 7  9 | $\begin{array}{rrr}1 & 2 \\ & 5 & 6 \\ & 7 & \\ 7\end{array}$ | 1  <br>  5 <br> 7 6 <br> 7  | $\begin{array}{lll}1 & & \bullet \\ \\ 7 & 5 & 6\end{array}$ | 8 | - $\begin{array}{ll}2 & \\ 5 & \\ & 9\end{array}$ | $\begin{array}{ll}2 & 3 \\ 5 & \\ & 9\end{array}$ | $\begin{array}{\|lll} \hline 1 & 2 & 3 \\ & & \\ & & 9 \end{array}$ |
| 2 5 8 | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ & 8 & 9 \end{array}$ | 3 | 4 | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & 6 \end{array}$ | $\begin{array}{llll}1 & & \\ & 5 & \\ & & 9\end{array}$ | $7$ | $\begin{array}{ll}2 & \\ 5 & \\ & 9\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & & \\ & 8 & 9 \end{array}$ |
| $\begin{array}{r}5 \\ 78 \\ \hline\end{array}$ | $\begin{array}{\|lll\|}1 & & \\ & 5 & \\ 7 & 8 & 9\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ 7 & 8 & 9 \\ \hline \end{array}$ | 2 | ${ }^{1} 5$ | 3 | $\|$4 5  <br>  8 9 | - 5 | 6 |
| 9 | $7{ }^{5} 8^{3}$ | $\begin{array}{r} 2 \\ 5 \\ 78 \end{array}$ | 5 78 | 4 | 2 7 | $6$ | $1$ | $\begin{array}{\|l\|} \hline \\ \hline \end{array}$ |
| 2 5 78 | 6 | 2 5 $7 \quad 8$ | 1   <br>  5  <br> 7 8  <br> 7 8  | 1 2 <br>   | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & 5 & \\ 7 & & 9 \end{array}$ | $3$ | $4$ |  2 <br> 7 8 <br>  9 |
| $1$ | 4 |  | ${ }_{78}$ | 3 | 6 |  |  |  2  <br> 7 8 9 |

1. Focus on one box, as shown above.
2. Within the box, identify one number in only one row or in only one column.

- Small "5" in blue circles

3. Eliminate the number outside the box in other cells within the row or within the column.

- Small "5" in red Xs
- The Extend Technique may not be required for less difficult puzzles.


## Use the Corner Technique -> Eliminate!

| $78^{6}$ | $\begin{array}{\|lll\|} \hline 1 & & \\ 7 & 8 & 9 \\ \hline \end{array}$ |  | 3 |  | 4 | - $\begin{array}{r}2 \\ 9\end{array}$ | 2 <br> 7 <br> 7 | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\begin{array}{lll} 1 & & 3 \\ & 5 & \\ 7 & & 9 \end{array}$ | 4 | $\begin{array}{lll} 1 & & \\ & 5 & 6 \\ 7 & & \end{array}$ | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & 5 & 6 \\ 7 & & \\ \hline \end{array}$ | $\begin{array}{ll} 1 & 2 \\ & 5 \\ 7 & \end{array}$ | - $\begin{array}{r}2 \\ \\ \\ \\ 9\end{array}$ |  |  2 <br>   <br> 7  |
|    <br>  5  <br> 7 8  | 2 | 7 7 8 | $\left\lvert\, \begin{array}{lll} & 5 & 6 \\ 7 & 8\end{array}\right.$ | 9 | ${ }^{*} 5$ |  |  | 4 |
| 4 | 1   <br> 7 5  <br> 7  9 | $\begin{array}{rrr}1 & 2 \\ & 5 & 6 \\ & 5 & 6 \\ 7 & & 9\end{array}$ | 1  <br>  5 <br> 7 6 <br> 7  | $1 \begin{array}{lll}1 & \\ 7 & 5\end{array}$ | 8 |  | $\begin{aligned} & 23 \\ & 5 \\ & 9 \\ & \hline \end{aligned}$ | 17 |
| 2  <br> 5  <br> 8  | $\begin{array}{\|lll} \hline 1 & & \\ & 5 & \\ & 8 & 9 \end{array}$ | 3 | 4 | $1 \begin{array}{ll}1 & \\ & 5\end{array}$ | $\begin{array}{\|lll\|}1 & & \\ & 5 & \\ & & \\ & & 9\end{array}$ |  | $\begin{aligned} & \hline 2 \\ & 5 \\ & 9 \end{aligned}$ |  |
| 5 78 | 1   <br>  5  <br> 7 8 9 | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ 7 & 8 & 9 \end{array}$ | 2 | ${ }_{7}{ }^{5}$ | 3 |  | - $5^{\bullet}$ | $6$ |
| 9 |    <br>  5  <br> 7 8  | $\begin{array}{r} 2 \\ 5 \\ 78 \end{array}$ | 5 78 | 4 | 2 <br> 7 | $6$ |  |  |
| $\begin{array}{r}2 \\ 5 \\ 78 \\ \hline\end{array}$ | 6 | 2 5 78 | 1   <br>  5  <br> 7 8 9 | $\begin{array}{ll}1 & 2 \\ & 5 \\ 7 & 8\end{array}$ | 1 2  <br>  5  <br>  5  <br> 7  9 | $3$ | 4 | 7 7.9 |
| $1$ | 4 | 2 5 7 | 7 7 | 3 | 6 |  |  | 7 ${ }^{2}$ |

1. Focus on one set of three rows or on one set of three columns, as shown above.
2. Within the set of three rows or within the set of three columns, identify two numbers each in two boxes.

- Large "1" and "8" in blue circles

3. Inside a corner with two cells within the other box, eliminate the numbers other than the two numbers.

- Small "2", "3" and "9" in red Xs

4. Select a single number each in the two cells, if possible.

- Small "1" and "8" in green circles
- The Corner Technique may not be required for less difficult puzzles.


## Use the Block Technique -> Eliminate!

| $78^{6}$ | $\begin{array}{llll} 1 & & \\ 7 & 8 & 9 \end{array}$ |  | 3 | $\begin{array}{lll} 1 & 2 & \\ & & 6 \\ 7 & 8 & \end{array}$ | 4 | * $2 \times \begin{array}{ll}2 & \\ & \\ & 9\end{array}$ |  | 5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $7{ }^{5} 6$ | $\begin{array}{\|lll\|} \hline 1 & & 3 \\ & 5 & \\ 7 & & 9 \end{array}$ | 4 | 1  <br> 7  <br> 7  | $\begin{array}{lll} 1 & 2 & \\ & 5 & 6 \\ 7 & \end{array}$ | $\begin{array}{ll} 1 & 2 \\ & 5 \\ 7 & \end{array}$ | - 2 <br> 9 | 8 | $\begin{array}{\|ccc\|} \hline-2 & 3 \\ 7 & & \\ \hline 7 & & 9 \end{array}$ |
| $\begin{array}{\|rr\|} & \\ & 5 \\ 7 & 8 \\ 7\end{array}$ | 2 | 7 7 8 |  | 9 | ${ }_{7} 5$ | $1$ | 3 <br> 7 | 4 |
| 4 | $1 \begin{array}{lll}1 & & \\ & 5 & \\ 7 & & 9\end{array}$ | 1 2  <br>    <br>  5 6 <br> 7  9 | 1  <br>   <br>  5 <br> 7 6 <br> 7  | $1 \begin{array}{lll}1 & & \bullet \\ 7 & 5 & 6\end{array}$ | 8 |  |  | $\begin{array}{\|lll\|} \hline 1 & 2 & 3 \\ & & \\ & & 9 \end{array}$ |
| 2  <br> 5 6 <br> 8  | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ & 8 & 9 \\ \hline \end{array}$ | 3 | 4 | $1 \begin{array}{lll}1 & \\ & 5 & 6\end{array}$ | $1 \begin{array}{lll}1 & & \\ & 5 & \\ & & 9\end{array}$ | $7$ | $\stackrel{2}{6}_{9}$ | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & & \\ & 8 & 9 \\ \hline \end{array}$ |
| 7 7 | $\begin{array}{llll}1 & & \\ & 5 & \\ 7 & 8 & 9\end{array}$ | $\begin{array}{\|lll\|} \hline 1 & & \\ & 5 & \\ 7 & 8 & 9 \end{array}$ | 2 | $7_{7}{ }^{1} 5$ | 3 | $*$   <br> 4 5  <br>  $\bullet$ 9 |  | 6 |
| 9 | ${ }^{7}{ }^{7} 5^{3}$ | $\begin{array}{r} 2 \\ 5 \\ 78 \end{array}$ | 5 78 | 4 |  |  | $1$ | $\begin{aligned} & 2 \\ & 7 \end{aligned}$ |
| $\begin{array}{r}2 \\ 5 \\ 7 \quad 8 \\ \hline\end{array}$ | 6 | 2 5 78 | 1   <br>  5  <br> 7 8 9 | 1 2 <br>  5 <br> 7 8 | $\begin{array}{\|lll\|} \hline 1 & 2 & \\ & 5 & \\ 7 & & 9 \\ \hline \end{array}$ |  | 4 | 2 7 |
| 1 | 4 | 2 5 7 | $7 \quad 5$ | 3 | $6$ |  | $\begin{array}{\|r} 2 \\ 9 \\ 7 \\ \hline \end{array}$ | 2 $7 \cdot 9$ |

1. Focus on one set of three rows or on one set of three columns, as shown above.
2. Within the set of three rows or within the set of three columns, identify three numbers placed consecutively.

- Large "6", "3" and "8" in blue circles

3. Identify a number outside the box which contains the three numbers.

- Large "5" in green circles

4. Recognise a row or a column in which the number is prohibited, and eliminate the number.

- Small "5" in red Xs

5. Select the number in non-prohibited zones.

- Small "5" in green circles
- The Block Technique may not be required for less difficult puzzles.

Complete the Puzzle

| 8 | 1 | 9 | 3 | 7 | 4 | 2 | 6 | 5 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 5 | 7 | 4 | 6 | 2 | 1 | 9 | 8 | 3 |
| 3 | 2 | 6 | 8 | 9 | 5 | 1 | 7 | 4 |
| 4 | 9 | 2 | 7 | 6 | 8 | 5 | 3 | 1 |
| 6 | 5 | 3 | 4 | 1 | 9 | 7 | 2 | 8 |
| 7 | 8 | 1 | 2 | 5 | 3 | 4 | 9 | 6 |
| 9 | 3 | 8 | 5 | 4 | 2 | 6 | 1 | 7 |
| 2 | 6 | 5 | 1 | 8 | 7 | 3 | 4 | 9 |
| 1 | 4 | 7 | 9 | 3 | 6 | 8 | 5 | 2 |

- Repeating these processes leads to the solution of the 5-star (very difficult) Sudoku puzzle.
- Once you start identifying single and unique numbers, you will see a domino effect to give you an orgasmic experience!


## Appendix: MagneScribe ${ }^{T M}$ Pen



- This pen with a very fine tip is ideal for playing Sudoku puzzles!
- MagneScribe ${ }^{m 4}$ Pen
[http://MagneScribe/](http://MagneScribe/)

