SUDOKU MANUAL

"Tips and Puzzles for Seniors"

Extra Puzzles Inside

Thank you for downloading this manual.
I sincerely hope that it can be of help to you.

What will you find inside?
Inside, you will find 26 techniques that will help you and support you in solving sudoku puzzles.

These techniques suit both beginners approaching this game and more experienced players who need support during stalemate or block and do not know how to continue completing the puzzles.
The techniques are not my invention but a collection of the best I have found on the web.

The first 15 techniques were taken from the site www.sudoku.com, which I suggest you visit and where you can also find explanatory videos of the methods you see in this manual.

The other 11 techniques were taken from the site www.sudokuonline.io.
Also, in this case, I suggest you visit this site to find valid articles on Sudoku and other games.

Ultimately, I have done nothing more than collect the best sudoku techniques in a single manual and put them at your disposal so that you can consult them whenever you need them.
Finally, in the second part of the manual, you will find 30 sudoku puzzles, of which 10 are easy, 10 are medium, and 10 are challenging so that you can practice and practice utterly free of charge.

I hope you appreciate the effort and willingness to offer this service. I renew my gratitude for your trust in me. I hope you can benefit from and enjoy the game of sudoku.

Common Errors

The 3 Most Common Mistakes Sudoku Players Make.

1. Not Checking the Numbers Already Present in the Row, Column, or 3x3 Box

Description: One of the most frequent mistakes sudoku players make is placing a number in a cell without first checking whether that number already exists in the same row, column, or 3x3 box. According to sudoku rules, each number from 1 to 9 must appear exactly once in each row, column, and 3x3 box. Failing to verify this before making a move often leads to conflicts later in the puzzle, creating a ripple effect of errors. For example, a beginner might place a "5" in a cell on the third row, not noticing that another "5" already exists in the same row, perhaps in the eighth column. This oversight forces the player to backtrack once the mistake is discovered, often requiring them to erase multiple entries to correct the error. This can be especially frustrating in larger or more complex puzzles, where such mistakes may not become apparent until much later. To avoid this, players should adopt a habit of systematically scanning the relevant row, column, and box before placing any number, ensuring compliance with sudoku's "uniqueness rule."

Reference: This mistake is frequently highlighted in guides like those on Sudoku.com, which emphasize the importance of always double-checking the "uniqueness rule" before placing a number to maintain a smooth solving experience.

Common Errors

2. Focusing Too Much on One Area and Ignoring the Rest of the Puzzle

Description: Many players, particularly beginners, tend to focus exclusively on a single area of the grid—such as a row, column, or 3x3 box—that appears easier to fill, without considering how their choices impact the rest of the puzzle. This narrow focus can lead to significant problems, such as dead ends where no valid moves remain to complete the puzzle. For instance, a player might eagerly fill a 3x3 box in the top-left corner by placing numbers that seem to fit, but fail to account for how those numbers restrict the options in the intersecting rows and columns. This could result in a situation where, later in the puzzle, the player cannot place a "4" in any of the remaining cells of a row because all possible spots are already blocked by earlier placements. Such oversights often force players to undo several moves or restart the puzzle entirely, which can be discouraging. To prevent this, it's crucial to maintain a broader perspective while solving, regularly shifting attention between different sections of the grid to ensure that each move supports the overall solvability of the puzzle. Experienced players often recommend solving easier sections incrementally while keeping an eye on the bigger picture, such as ensuring that each number placement leaves enough flexibility for future moves in other areas.

Reference: Articles like those from MasterClass point out that a common mistake is "losing sight of the big picture," recommending that players alternate their focus between different sections of the puzzle to maintain balance and avoid dead ends.

Common Errors

3. Guessing Instead of Using Logic

Description: A prevalent mistake, especially among beginners, is resorting to guessing numbers instead of relying on logical strategies such as elimination, deduction, or pattern recognition. Sudoku is a logic-based game designed to be solved entirely through reasoning, without any need for guesswork. However, when players find themselves stuck—perhaps unable to immediately identify the next number to place—they may start inserting numbers randomly, hoping they'll work. This approach often leads to errors that disrupt the puzzle's integrity, requiring the player to backtrack and correct their mistakes, which can be a time-consuming and frustrating process. For example, a player might guess a "7" in a cell in the fifth row, thinking it might fit, only to discover later that this choice creates a conflict in a 3x3 box or column, such as two "7s" appearing in the same section. This not only invalidates the guess but also affects other placements made afterward, potentially unraveling a significant portion of the puzzle. To solve sudoku effectively, players should use proven techniques like identifying "naked singles" (cells with only one possible number) or "hidden pairs" (two numbers that can only go in two specific cells within a section), which allow for progress through logical deduction rather than chance. By cultivating a methodical approach and resisting the temptation to guess, players can enjoy a more rewarding and efficient solving experience.

Reference: Guides such as those by Conceptis Puzzles stress that guessing is a common mistake to avoid, advising players to use logical techniques like "naked singles" or "hidden pairs" to make steady, error-free progress.

Common Errors

Conclusion

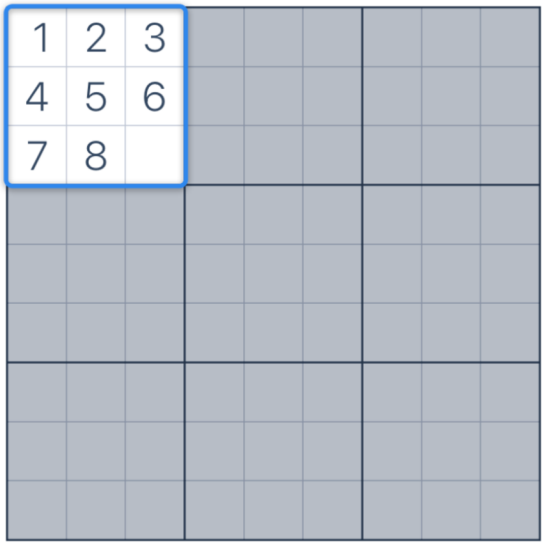
These three mistakes—not checking for existing numbers, focusing too narrowly on one area, and guessing instead of reasoning logically—are common pitfalls that can frustrate sudoku players. Avoiding them through careful checking and logical strategies can improve the solving experience.

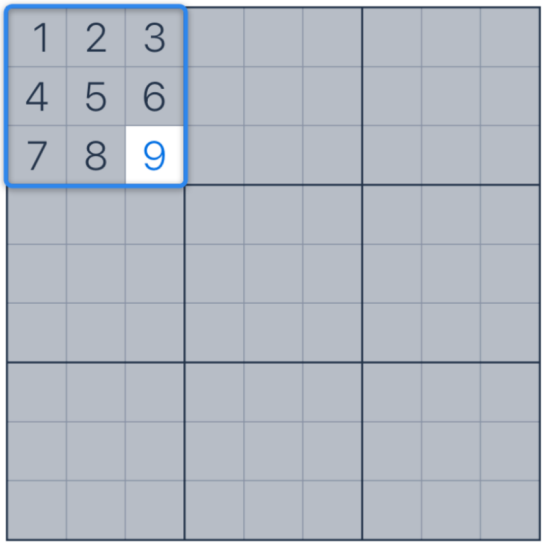
Technique 1

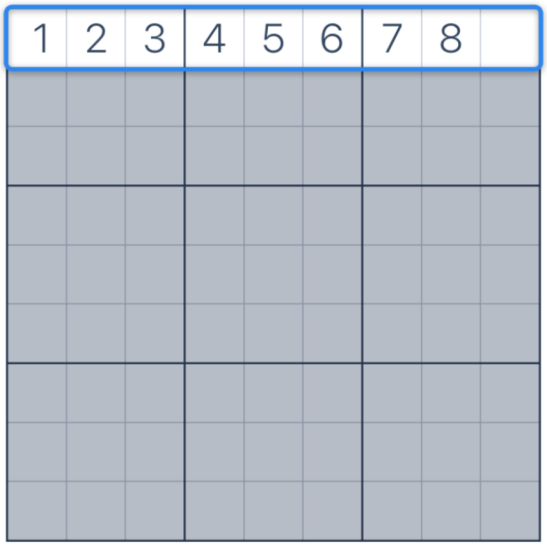
"Last free cell" technique.

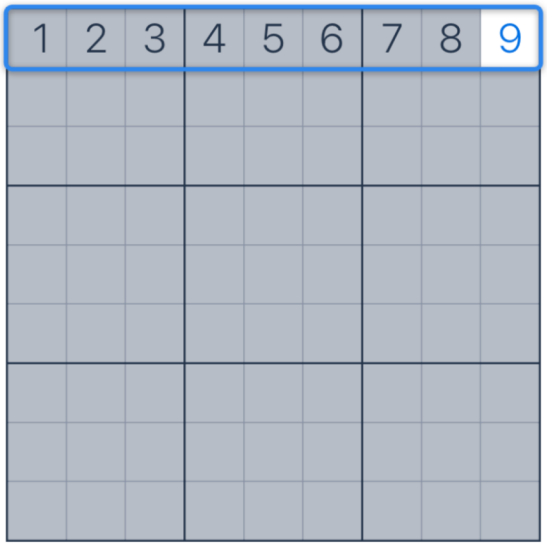
"Last free cell" is the basic Sudoku solving technique. It's pretty simple and based on the fact that each 3×3 block, vertical column or horizontal row on Sudoku grid should contain numbers from 1 to 9 and each number can be used only once within 3×3 block, vertical column or horizontal row.

Therefore, if we see that there is only one free cell left in the 3×3 block, vertical column or horizontal row, then we have to define which number from 1 to 9 is missing and enter it in this empty cell.
You can see how it looks in the examples below.









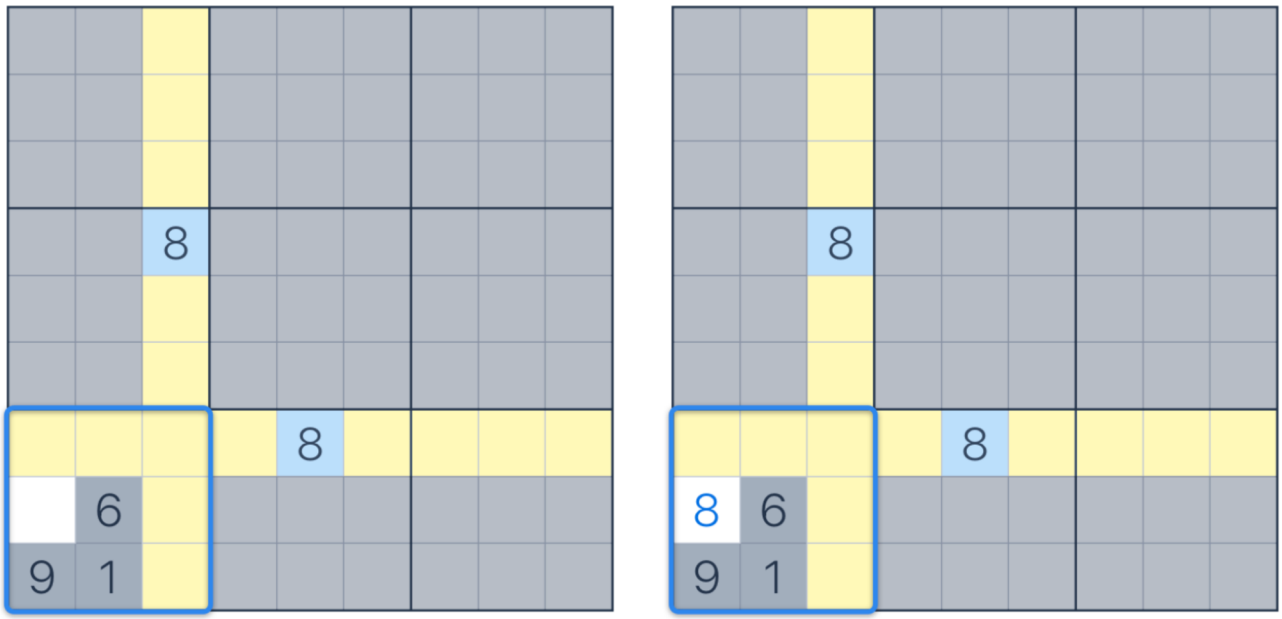
Technique 2

"Last remaining cell" technique.

"Last remaining cell" is another basic Sudoku strategy. It's based on the fact that numbers should not be repeated within 3×3 block, vertical column and horizontal row.

Let's take a look at an example with the 3x3 block. There always must be number 8 - in each block, column and row. There's already 8 in the column and in the row. As we already know, we can't repeat numbers. So we can't place 8 there again. It means that there's only one cell remaining inside the block and we should put number 8 into it.

The same technique applies to the Rows and Columns.
That is how "Last remaining cell" technique can be used while solving Sudoku. Once you have learned it, you can proceed with the following Sudoku strategies.

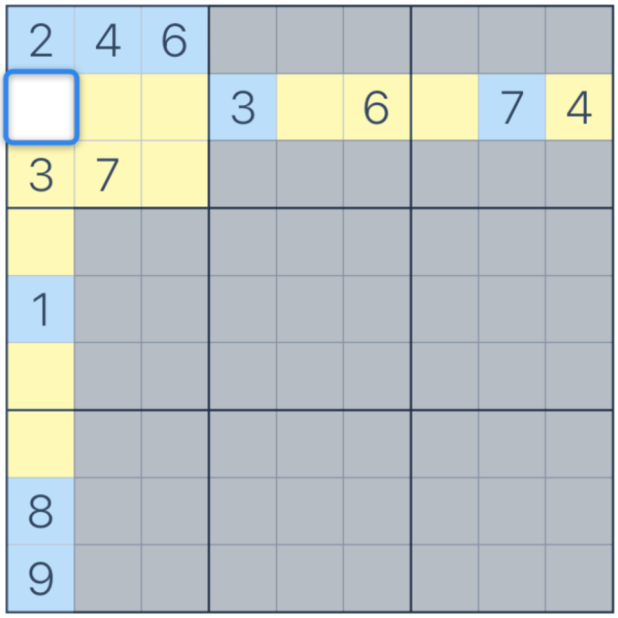


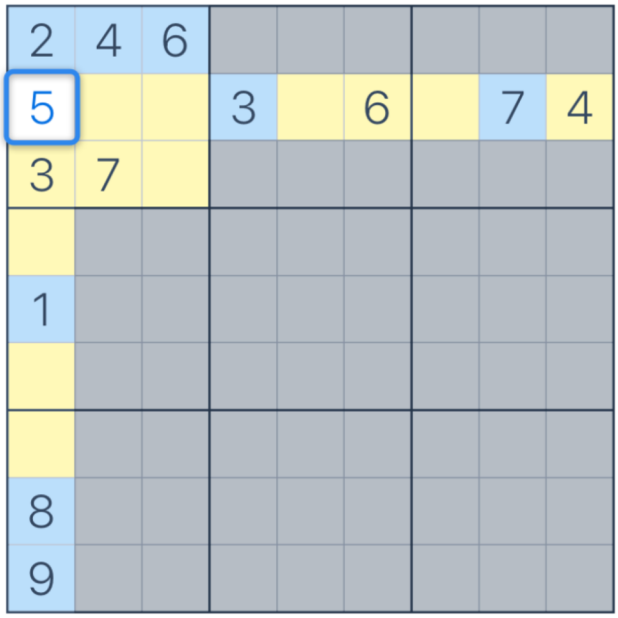
Technique 3

"Last possible number" technique.

Last possible number is a simple strategy that is suitable for beginners. It is based on finding the missing number.
To find the missing number you should take a look at the numbers that are already exist in the 3x3 block you are interested in, and in the rows and columns connected with it.

Let's take a look at an example.





Pay attention to the highlighted cell. Look at the numbers in its block, row and column. We can see that numbers 1,2,3,4,6,7,8,9 are already used in this row, column and block.

The only missing number is 5. Considering that numbers should not be repeated, the only number that must be put in this cell is 5.

That is how "Last possible number" technique works. Once you have mastered it, you will begin to solve Sudoku easier and faster!

Technique 4

Notes in Sudoku.

If you get stuck on Sudoku grid and don't see the obvious solutions for the rest of cells, you should use Notes. With the help of Notes you should fill in all the possible options for each blank cell, focusing on the numbers that are already on the Sudoku grid.

It is very important to fill in Notes correctly. Since if you make a mistake, it will be much more difficult and longer to solve Sudoku.

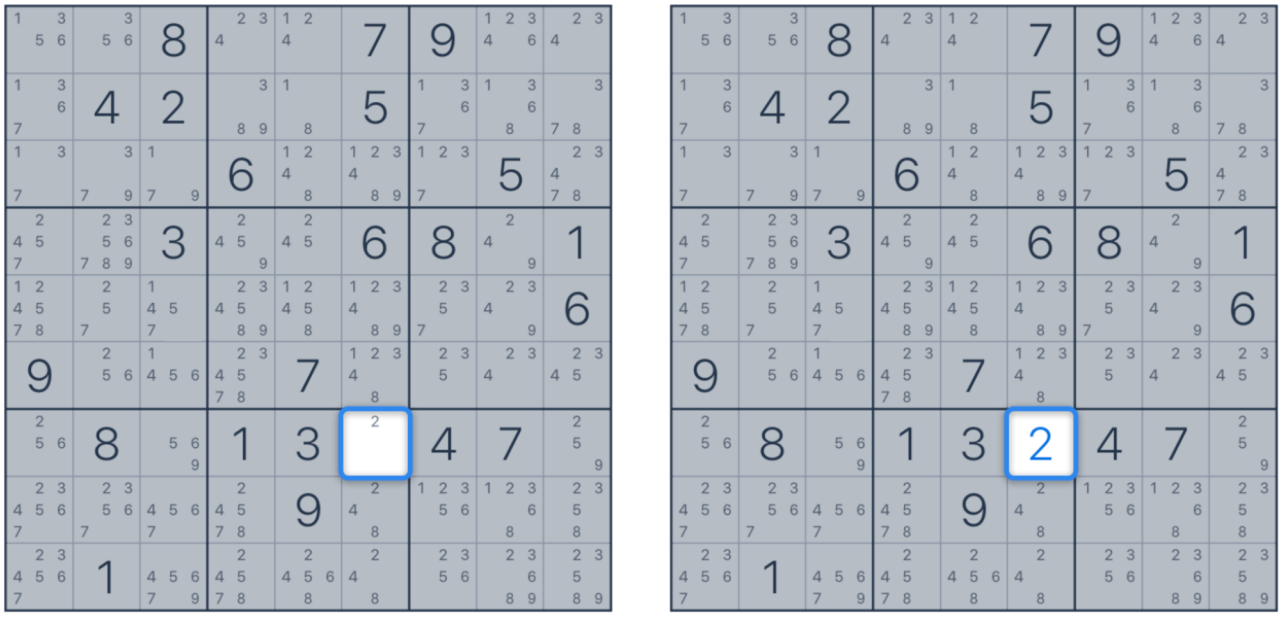
When you place the Notes, it will be easier for you to understand where and what number should be placed. Also, many advanced Sudoku solving techniques are based on the use of Notes. You can learn about such techniques from the lessons on our Sudoku.com website.

Technique 5

"Obvious singles" technique.

This strategy is based on the correct placement of Notes. Sometimes it is called Naked Singles. The point is that in a specific cell only one digit (from the Notes) remains possible.

Let's have look at this case with an example.



Let's look at the highlighted cell. We can see that it is filled with only one Note - number 2. It means that this cell has only one possible solution. Since it is the only possible option, this cell will be 2. So we remove Note from this cell and fill it with the number 2.

That is how "Obvious singles" technique works. As you see, this is not as difficult as it seems. Therefore, if you put "Obvious singles" technique into practice, the process of solving Sudoku will become easier and faster!

Technique 6

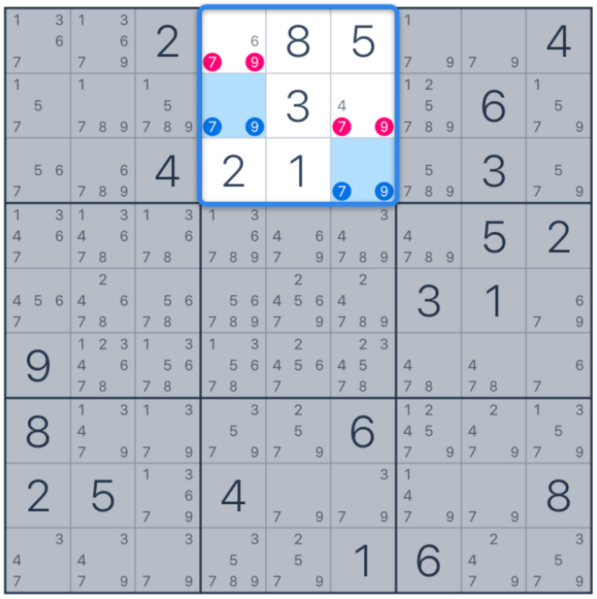
"Obvious pairs" technique.

Like the "Obvious Singles" technique, "Obvious pairs" is based on the correct placement of Notes. The point is that you should find 2 cells with the same pairs of Notes within 3x3 block.

This means that these pairs of Notes cannot be used in other cells within this 3x3 block. So they can be removed from your Notes. It will be easier to understand this strategy if you look at the example.

Let's look at this block. We see empty cells filled with notes of possible numbers. Among them, there are two cells that contain 7 or 9.

This means that one of these cells necessarily contains 7 and the other one contains 9. This also means that we can't have 7 and 9 in other cells of this block.



Hence, we remove them from other cells' notes. Next we can apply the "Obvious singles" rule we learned in the previous lesson. We'll write 6 in the cell with a single note of 6 and and 4 in another one.

That is how "Obvious Pairs" technique can be used while solving Sudoku. Once you have learned it, you can proceed with the following Sudoku strategies.

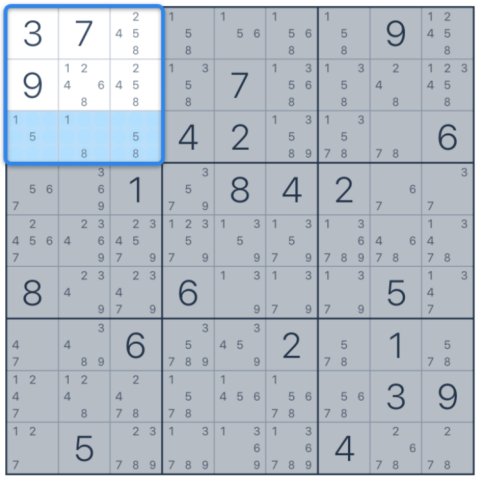
Technique 7

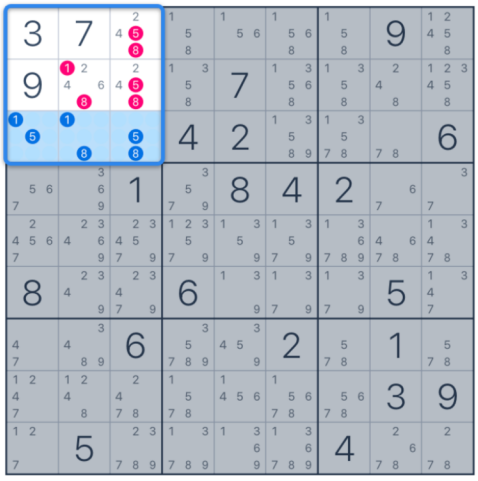
"Obvious triples" technique.

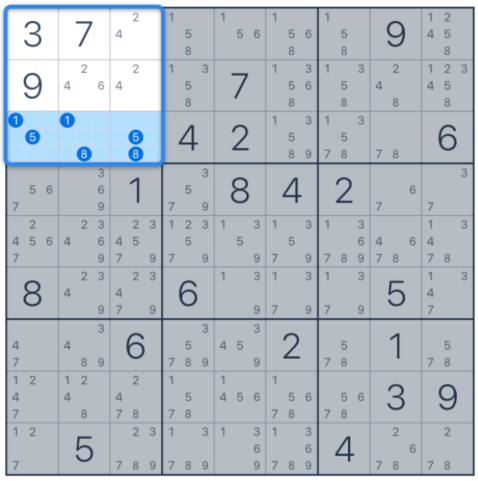
This Sudoku solving technique is built upon the previous one - "Obvious pairs". But "Obvious triples" is not based on two numbers from the Notes, it's based on three. This is the only difference. To understand better, let's take a look at the example.

Look at the top left block. Its three bottom cells contain notes of 1, 5; 1, 8 & 5, 8. This means that these cells have number 1, 5 & 8 in them but we don't know yet where each number is exactly. What we know though, is that 1, 5 & 8 can't be in other cells of this block.

So, we can remove them from the notes.







That is how "Obvious Triples" technique works while solving Sudoku.

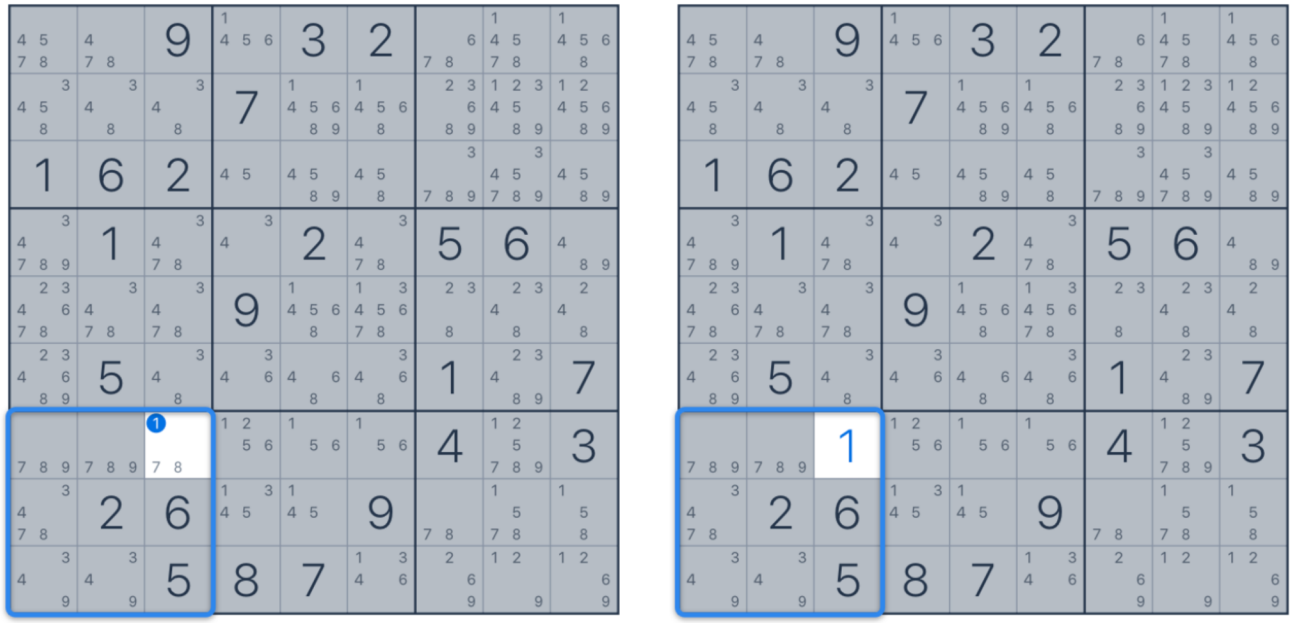
Technique 8

"Hidden singles" technique.

"Hidden singles" is a quite simple Sudoku technique. The point of "Hidden singles" is that a Note is the only one of its kind in an entire row, column, or 3x3 block. However, this technique requires careful attention from the player, because it can be quite hard to spot the single Notes.

It will be easier to understand this technique if you look at the example.

Let's pay attention to this 3x3 block with Notes. There is only one cell, that may contain number 1. It's the top right cell. There are no any other cells in this block whith the Note 1.



So we can remove all the Notes from this cell and put number 1 instead, since it's the only possible option.

That's it for "Hidden singles" technique. Once you have learned it, you can proceed with the following Sudoku strategies.

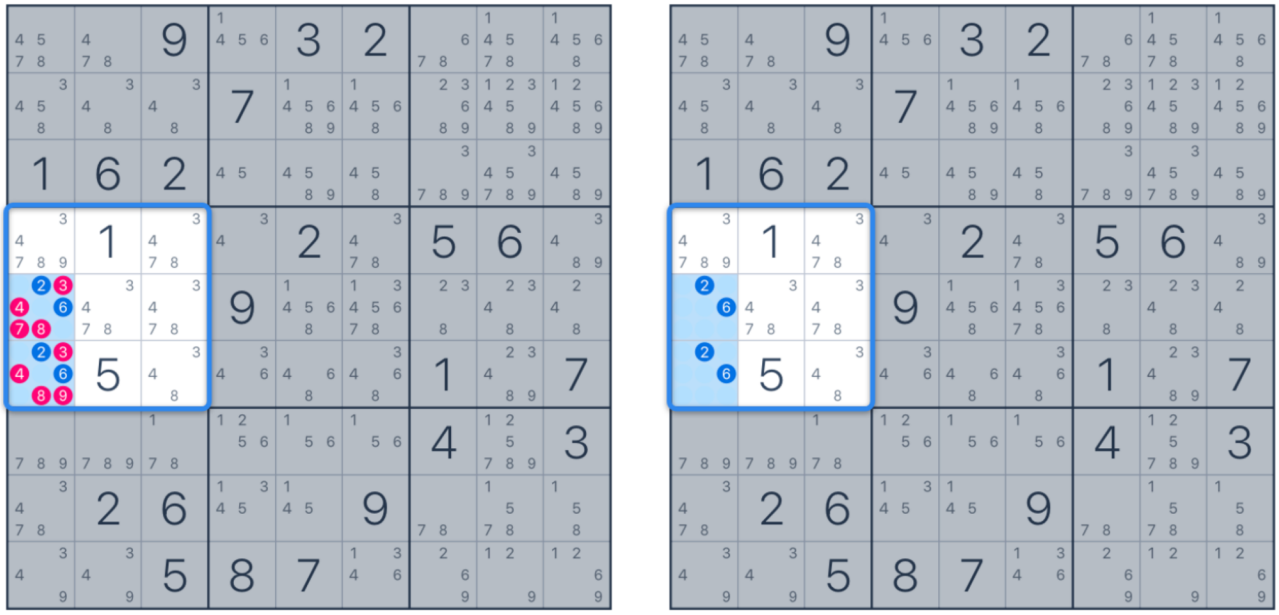
Technique 9

"Hidden pairs" technique.

"Hidden pairs" technique works the same way as "Hidden singles". The only thing that changes is the number of cells and Notes. If you can find two cells within a row, column, or 3x3 block where two Notes appear nowhere outside these cells, these two Notes must be placed in the two cells. All other Notes can be eliminated from these two cells.

For example:

Let's pay attention to this block with Notes and look for the numbers that can be found in Notes less often than others. Only two cells contain 2 and 6. This means 2 must occupy one of these cells and 6 must occupy another.
Any other numbers cannot be found in these cells.



After this conclusion, extra numbers can be deleted from the Notes to avoid confusion.

So, you know how to apply "Hidden pairs" technique in Sudoku. Now it's time for some practice!

Technique 10

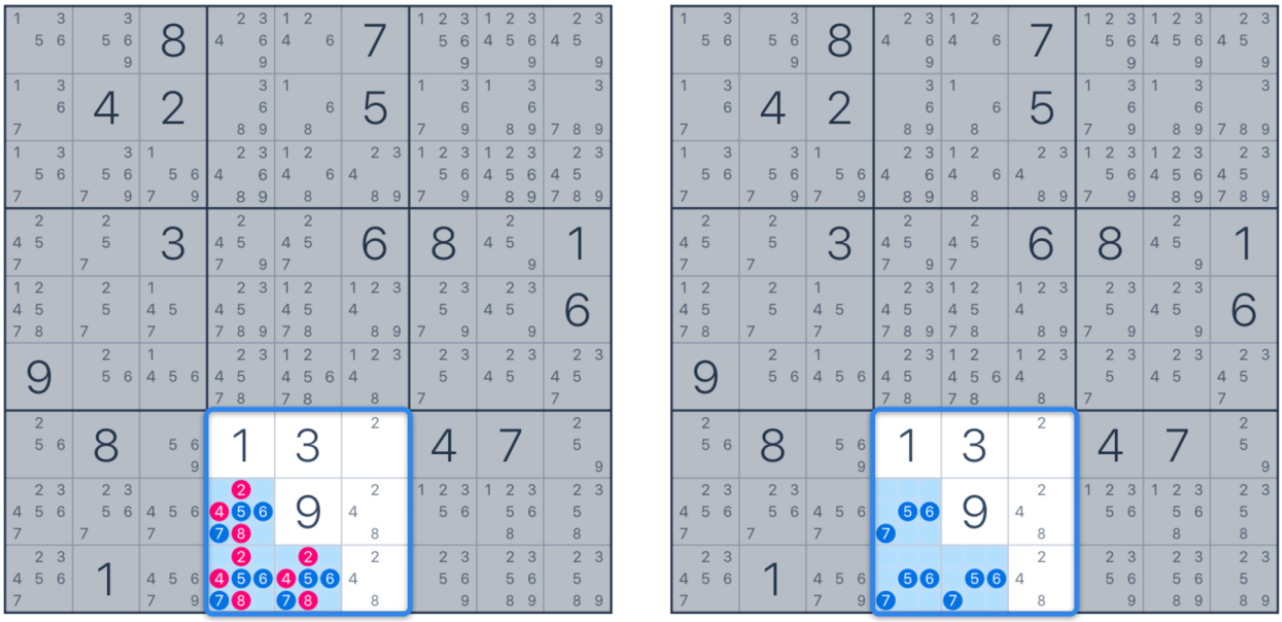
"Hidden triples" technique.

"Hidden triples" technique is very similar to "Hidden pairs" and works on the same concept.

"Hidden triples" applies when three cells in a row, column, or 3x3 block contain the same three Notes. These three cells also contain other candidates, which may be removed from them.

It will be easier to understand this technique if you look at the example.

Take a look at the highlighted cells. There are only three cells, which contain repeated numbers: 5, 6 and 7. This means each of these numbers must occupy one of these cells. And any other numbers cannot be found here. If so, 5,6 and 7 cannot be presented in any other cell of this 3x3 block as well."



After this conclusion, extra numbers can be deleted from the Notes to avoid confusion.

That is how "Hidden Triples" technique works while solving Sudoku.

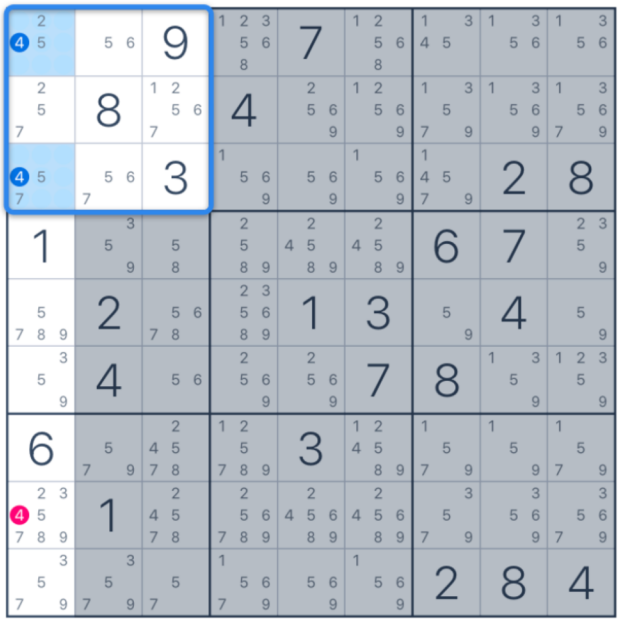
Technique 11

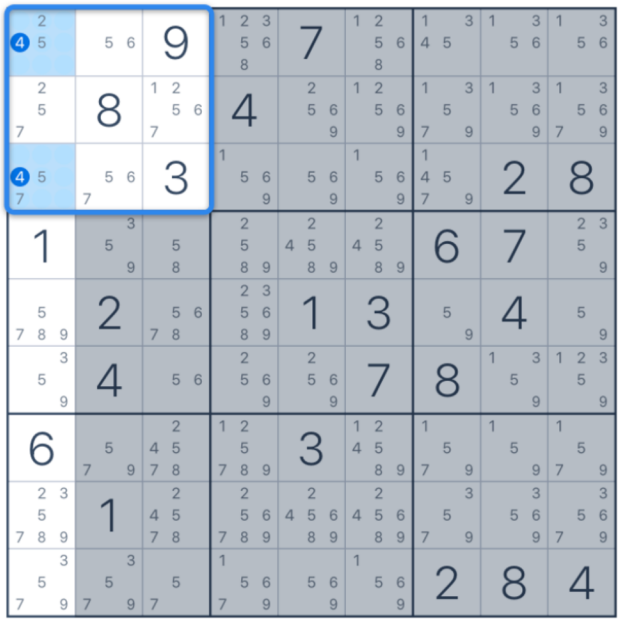
"Pointing pairs" technique.

"Pointing pairs" applies when a Note is present twice in a block and this Note also belongs to the same row or column. This means that the Note must be the solution for one of the two cells in the block. So, you can eliminate this Note from any other cells in the row or column.

To understand "Pointing pairs" better, let's take a look at the example.

Let's look at the block at the top left corner. All the cells that might contain number 4 are located in one column. As number 4 should appear in this block at least once, one of the highlighted cells will surely contain 4.





Hence, we can safely eliminate all other possible 4s from all the cells of this column. Remember that you can do the same trick for blocks, rows, and columns.

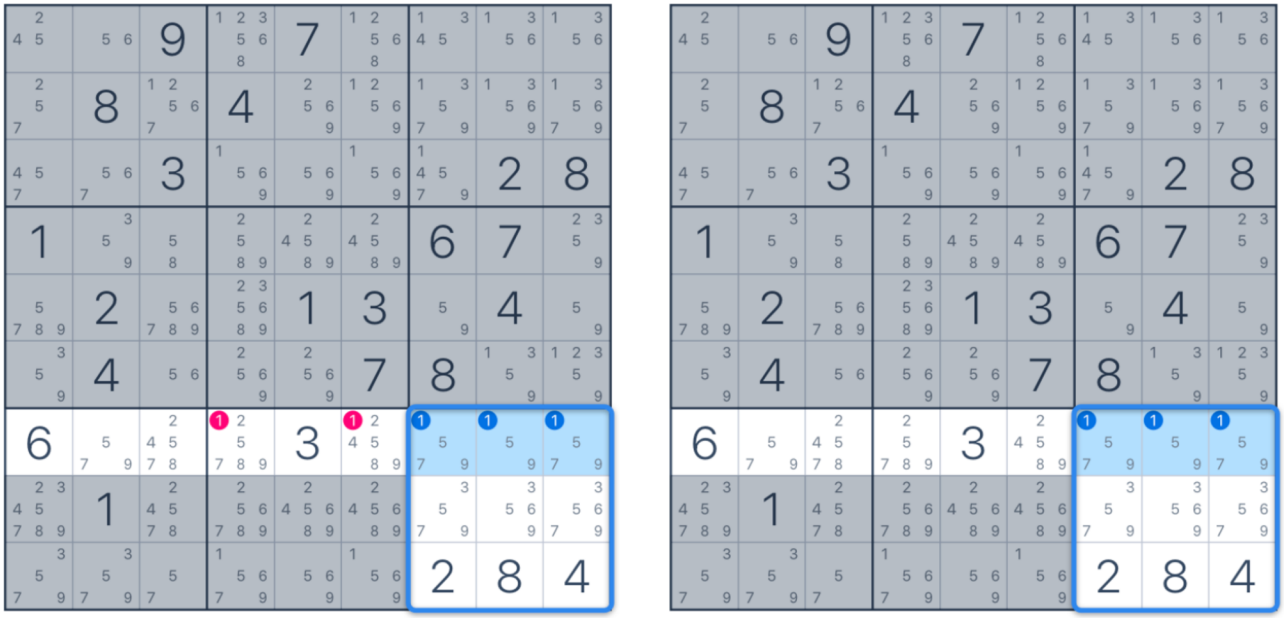
That's it for "Pointing pairs" technique. Now you can proceed with the following Sudoku strategy "Pointing triples".

Technique 12

"Pointing triples" technique.

"Pointing triples" technique is very similar to "Pointing pairs". It applies if a Note is present in only three cells of a 3x3 block and also belongs to the same row or column.
This means that the Note must be a solution for one of these three cells in the block. So, obviously it can't be a solution of any other cell in the row or column and can be eliminated from them.

For example:
Let's take a look at the bottom right corner. In this block all the cells that might contain number 1 are located in one row. As number 1 must appear in the bottom right block at least once, one of the highlighted cells will surely contain 1.



After this conclusion all other possible numbers 1 can be safely deleted from the Notes of this row to avoid confusion.

Remember that you can do the same trick for blocks, rows, and columns.

That is how "Pointing Triples" technique works. Once you have learned it, you can get some practice.

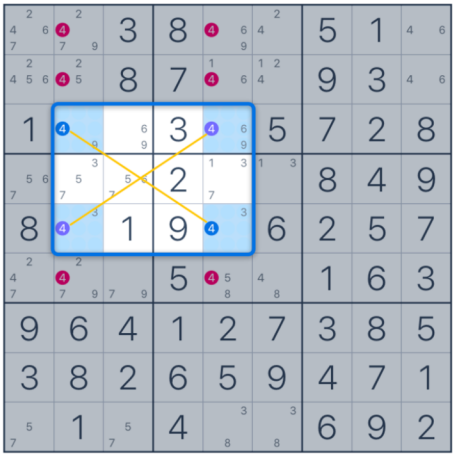
Technique 13

"X-wing" technique.

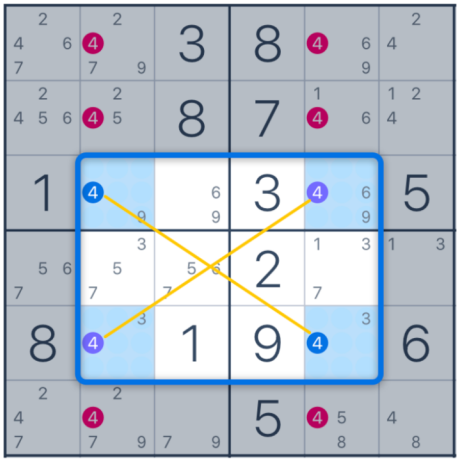
"X-wing" is an advanced sudoku technique, which is based on the two parallel rows or two parallel columns. You shouldn't pay attention to the 3x3 blocks as they aren't involved in this strategy.

It will be easier to understand this technique if you look at the example.

Let's take a look at the two rows. There are two cells in each of them that contain a note of 4. Since 4s can't repeat in the same row or column, we can safely assume that 4s will be placed diagonally – either in light blue cells or dark blue cells.



Now let's zoom out and take a look at the columns involved. Since 4s are diagonal, there will already be one number 4 in each of these columns. That means that we can't write it again.



So, we can confidently remove 4 from all the remaining notes of these two columns.

Now you know how to apply X-wing technique in Sudoku and can proceed with the following advanced Sudoku strategy "Y-Wing".

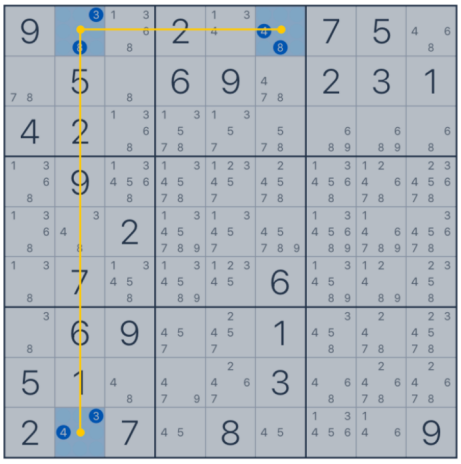
Technique 14

"Y-wing" technique.

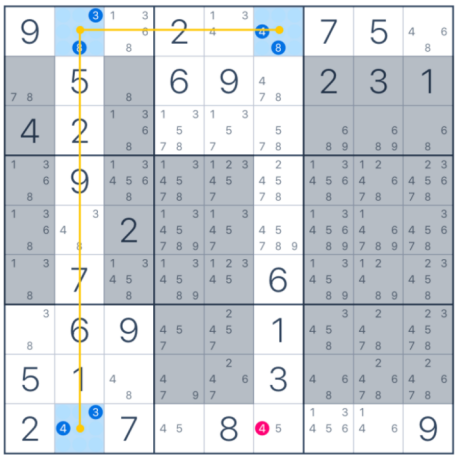
"Y-Wing" technique is similar to "X-Wing", but it based on three corners instead of four.

Let's take a look at this technique with an example.

To start, we need to find a cell with exactly two notes. We'll call this cell a pivot. Then, we'll look for two more cells with 2 notes as well. These cells (called pincers) should be in the same row, column or block as the pivot. One of the two numbers in each pincer should be the same as in the pivot. The other number is the same for both pincers.



Now let's look where the both pincers intersect. That would be a cell in the bottom row. If that cell contains a note that is shared by both pincers, we can eliminate it. In this case it's number 4, because there's 4 in both pincers.



That is how "Y-wing" technique works. This is an advanced sudoku strategy. It may take you some time and practice to figure it out.

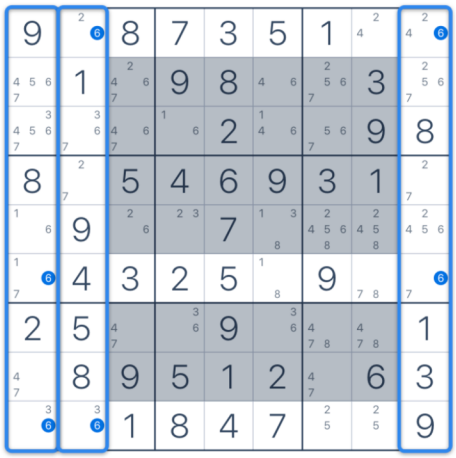
Technique 15

"Swordfish" technique.

The "Swordfish" technique is an advanced Sudoku strategy. It's usually applied in the hard levels of Sudoku puzzles to eliminate candidates. "Swordfish" is similar to X-wing but uses three sets of cells instead of two.

To understand better, let's take a look at the example.

In this puzzle 6 is our "fish digit" and rows 1, 6 and 9 are the base sets. The candidates for number 6 also align up perfectly in 3 columns. So, there are two options for number 6 to reside.



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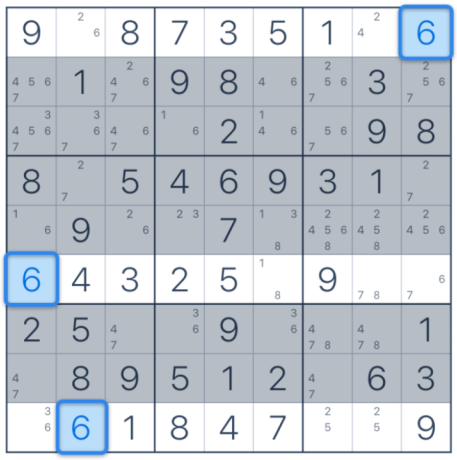
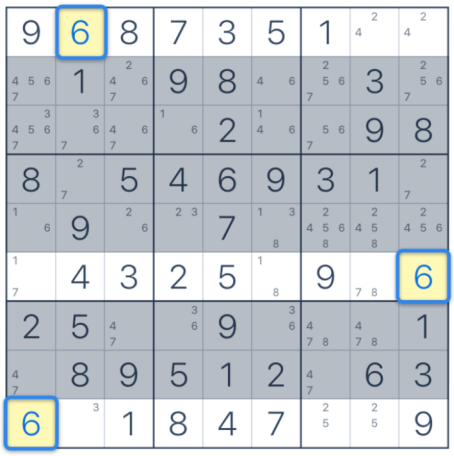
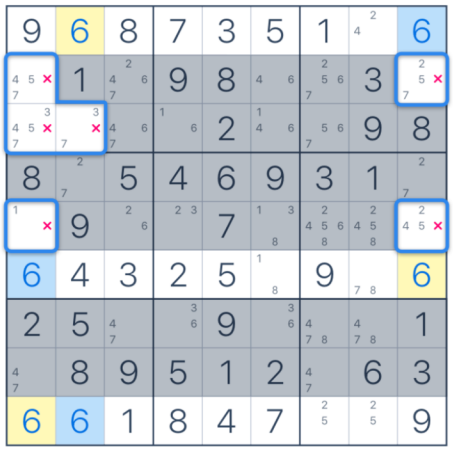


Technique 15

Or this way



Either way, those 3 sets cover the aligned columns meaning 6 cannot appear twice there. Hence, we can safely eliminate 6 from all other notes in these columns.



Now you know how to apply "Swordfish" technique in Sudoku. It's very hard to spot but tremendously useful for your sudoku-solving arsenal.

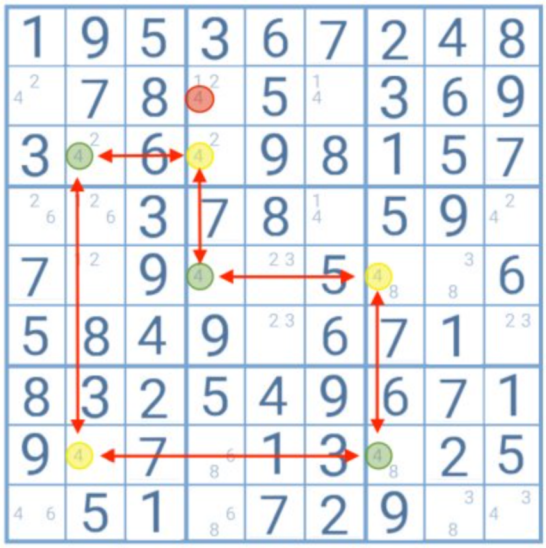
Technique 16

"Swordfish" technique.

This strategy helps to eliminate a candidate from cells as well. To apply it, the player must find a digit candidate for two cells in the same row, in three different rows. These cells must also be aligned by column, regardless of the shape they create.

Connecting them will result in a closed chain that reveals two sets of possible placements for that digit. The player can then put them to the test and eliminate that number as a candidate to the cells where it would become impossible in both cases.

Example:



In this grid, number 4 is a candidate for two cells in three different rows, allowing the player to use the Swordfish technique.

Connecting them reveals that whenever a digit highlighted in green is possible, the yellows become impossible, and vice-versa. Thus, there are only two sets of possibilities within this chain for number 4, the green and the yellow sets.

When testing them on the grid, the player finds that the 4 highlighted in red would be an impossible candidate in both cases. It can then be safely removed from that cell, leaving only numbers 1 and 2 as candidates for it.

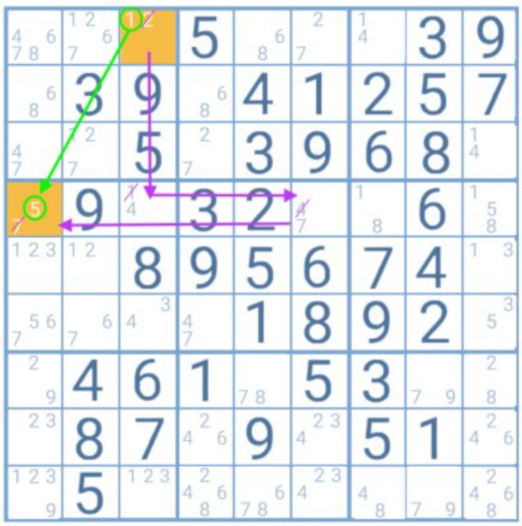
Technique 17

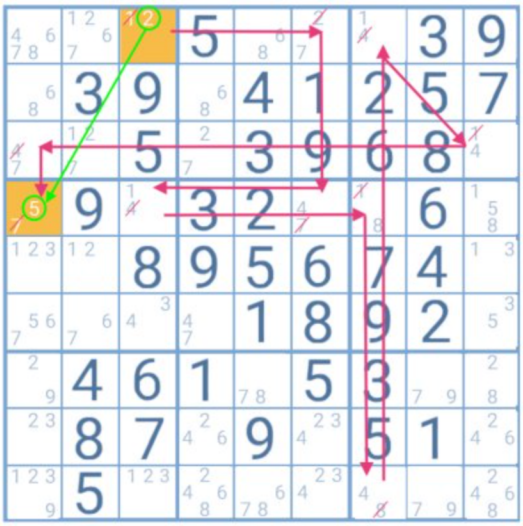
"Forcing Chains" technique.

Forcing chains are one of the easiest advanced Sudoku strategies to understand. Unfortunately, applying it requires very high levels of concentration and the outcome can be uncertain. When it does work, it gives the player the solution for one cell.

To apply a simple forcing chain, there must be cells with only two candidates in the grid. The player picks one and begins testing the changes to the puzzle when applying each of the two digits in that cell. The goal is to find if there is a cell that would bear the same result whichever digit is used. If so, that will safely be the solution for it.

Example
In this example, the top highlighted cell with the candidates 1 and 2 was used to apply the forcing chains technique. When testing for both digits, the player finds that the outcome for the highlighted cell with candidates 5 and 7 is always 5. Therefore, this digit will be the solution for that particular cell.





Note that when testing for number 1, the player could also have made a chain by going right (to the cell with 1 and 4 as candidates). The chain would be longer, but the result is the same. Then number 5 is still the answer to the highlighted cell.

Out of the advanced Sudoku strategies, the forcing chains method is usually a last resort as the chains can be very long and complicated and they do not always produce results.

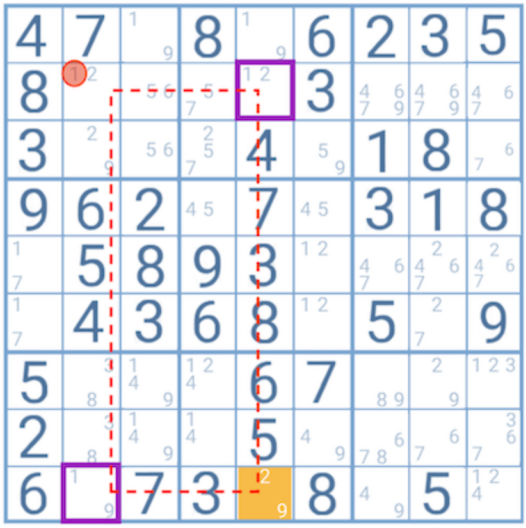
Technique 18

"The XY-Wing" technique.

The XY-Wing is a strategy to remove candidates. It can be applied when there are three cells in the grid, each with only a pair of candidates that share at least one digit among them (e.g. AB/AC/CB). With a bit of mental effort, the player can picture a Y when connecting them, with one cell working as the stem and the remaining as the branches.

The next step is to trace lines in each row and column of the cells to form a square or rectangle. If any of the shared digits are candidates within the lines connecting the cells or at an intersection point, they can be safely removed.

Example



In the example above, the stem cell contains the digits 2 and 9 (highlighted in orange) and connects to the branches, each with one of these digits as candidates (purple squares).

If any of the cells on the red paths contained one candidate shared by the cells on the extremities of the lines, it could be eliminated, but this is not the case.

However, the cell at the intersection of both branches of the Y contains a shared digit between both (number 1), allowing the player to eliminate it as a candidate for that cell.

Technique 19

"Unique Rectangle Type 1" technique.

This strategy applies when the player finds four cells with the same pair of candidates facing each other. They are grouped in parallel sets of two, sharing the same columns, rows, and blocks. This is a deadly pattern that results in a double solution for the puzzle.

However, a well-designed grid will always ensure that an extra candidate is also possible in at least one of the cells of the rectangle. This number is necessary to break the deadly pattern and it is the solution to that cell.
Example

In this example, the four cells containing the pair 2/3 form a unique rectangle as they are not affected by any other cell in the grid. Thus, they could potentially create a double solution situation as the position of the 2 or the 3 is indifferent.

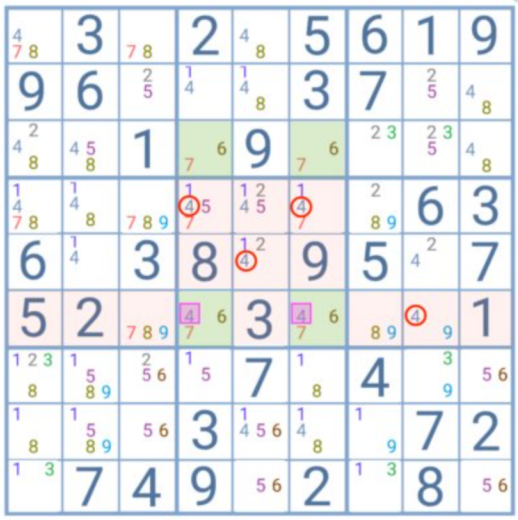
Nevertheless, one of the cells in this rectangle has two extra candidates, the 1 and the 8. These digits will break the deadly pattern. The numbers 2 and 3 can be eliminated as candidates for that cell.

Technique 20

"Unique Rectangle Type 2" technique.

The Type 2 strategy follows the same assumptions as Type 1, but instead of providing a solution, it helps to reduce the number of candidates.

In this pattern, the player finds the same setting as before, but now two cells contain the same extra candidate. If these cells share the same row, column, and/or group, it is possible to remove the digit as a candidate to any other cell in those areas.



Numbers 7 and 6 form the deadly pattern in this puzzle, with number 4 working as the extra digit. As this digit will have to break the pattern, the player knows for certain that its solution is within those 2 cells. Therefore, it cannot be a candidate for any other cell within that group or row. The digits circled in red can be eliminated.

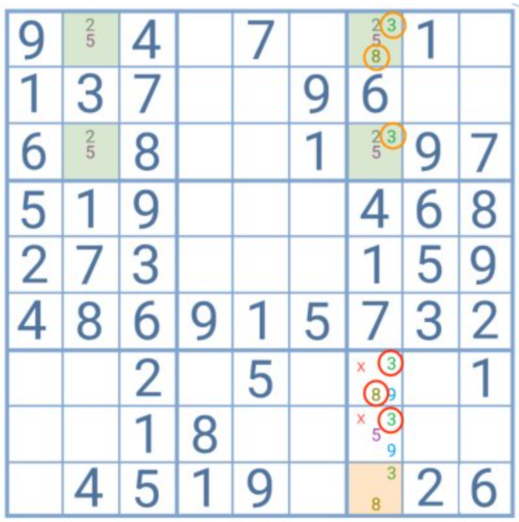
Technique 21

"Unique Rectangle Type 3" technique.

This technique combines the basic rectangular pattern with the concept of locked subsets. As with Type 2, two aligned cells of the pattern contain extra candidates but now these digits are not similar. Yet, those cells will be for certain the solution to one of them.

The player must then search for a cell that contains only the pair of pattern breakers as candidates. It must also be connected to the base cells. When available, it is possible to eliminate the pattern breakers as candidates to other cells in the areas shared by the pattern and that specific cell.

Example



The numbers 3 and 8 are the pattern breakers in this example. The player knows that either one or the other will be positioned in one of those two cells.

In their column, there is also a cell containing only this pair as candidates (highlighted in orange). Thus, if the 3 is the pattern breaker the solution to the orange cell will be 8. If 8 is the pattern breaker then its solution will be the 3.

In short, the player knows for sure the 8 and the 3 will be positioned in one of those three cells. They can then be eliminated from the remaining cells in that same column.

Technique 22

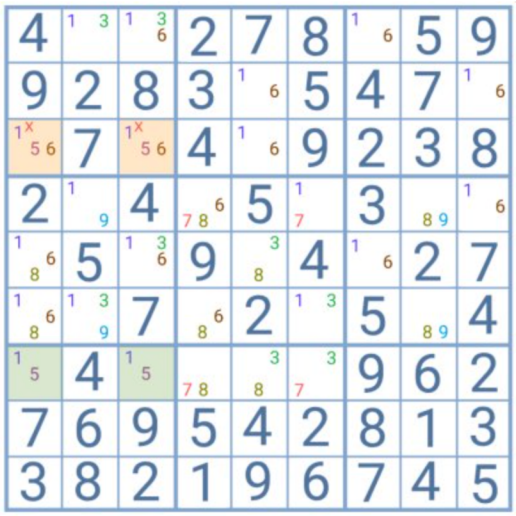
"Unique Rectangle Type 4" technique.

The Type 4 technique is only a variation of Type 2. A combination of the two strategies is also possible.

As with Type 2, the player finds the same pattern breaker in two different cells that share a column or row, but in the Type 4 technique, these also need to share the same block.

The player knows that these two cells will be filled with the extra candidate plus one of the digits of the deadly pattern. If out of the base pair, one digit is not a candidate to any other cell within that row, column, or block, then the second digit of the pair becomes invalid in those two cells.

Example



In this example, the pair 1/5 forms the deadly pattern while the 6 works as the pattern breaker.

The player knows that one orange cell will contain a 6 while the other will be either a 1 or a 5. However, the 5 is not a candidate for any other position within that block. This means that the orange cells contain a hidden naked pair formed by the 6 and the 5. The 1 can thus be removed as a candidate for either of them.

Technique 23

"Unique Rectangle Type 5" technique.

With this strategy, the player finds two or three cells with the same pattern breaker but these are not necessarily connected by row, column, and/or block. However, it is still possible to remove it as a candidate for all the cells that are simultaneously affected by those cells in the pattern.

Example

Three cells contain the number 6 as the pattern breaker in this example. One of these will have to be the solution for 6. Therefore, this digit can be eliminated as a candidate for any cell affected simultaneously by the three cells.

The Unique Rectangle set of strategies is very useful to progress at any Sudoku difficulty level. It is also one of the most used by players as it is easy to identify the required pattern to apply any of its techniques.

Technique 24

"Sudoku X-Wing" technique.

The Sudoku X-Wing strategy is one of the most frequent techniques that can be applied to Sudoku puzzles from a medium difficulty level onwards. It is a very straightforward technique with an easily identifiable pattern. It focuses on one single digit and its goal is to restrict the number of cells that can have that number as a possible candidate.

Together with the Swordfish, the Sudoku-X-Wing technique is also a valuable strategy for any player to learn as it branches out into more complex patterns and techniques that are required to solve impossible puzzles.

To be able to apply this technique, the player must find 2 rows or 2 columns where a single digit is a candidate for only two cells of each. These cells must be aligned by column and row, forming a square or rectangle when connected.

The basic principle of this technique is simple. Since the digit has only two possible solutions in the rows or columns under analysis and each cell is directly affected by the others, the player can identify only two possible sets of solutions for the digit. That is, the pairs formed by the cells diagonally opposite to one another.

By testing each set of possibilities on the grid, it becomes clear that whenever the Sudoku X-Wing technique is applied to rows, the digit under analysis cannot be a candidate for any cell in the columns connected to the base cells. Likewise, with X-Wing patterns on columns, it is impossible for the digit to be a candidate in the rows connected to the base pattern.

Practical example

Technique 24

According to the basic rules of Sudoku, every row and column must contain the numbers from 1 to 9 without repetitions.

In the example above, it is clear that the number 8 has only two possible solutions within the highlighted columns. Since these 4 cells are aligned by column and row, it is possible to apply the Sudoku X-Wing technique.

If the two 8 connected by the dotted line are true, the other pair becomes false and vice-versa. Trying both configurations reveals that, regardless of the final answer, the number 8 cannot be a candidate in the rows connecting to the base pattern. Thus, the 8 circled in red between the two highlighted yellow cells at the bottom can be eliminated.

Technique 25

"Finned X-Wing" technique.

Throughout the puzzle, it is usual for the player to find incomplete Sudoku X-Wing patterns. Sometimes, one of the vertices of the rectangle/square is missing because the digit is a candidate for more cells in that row/column and the 2 by 2 requirement of the X-Wing pattern is not met.

However, when the extra possibilities for the digit are restricted to one group, the player has a Finned X-Wing pattern. The fins, in this case, will be the extra positions for the digit.

The player must then ask themselves:
1. If either of the fins is true, which candidates can I eliminate?
2. If the fins are false, the X-Wing pattern applies. Which candidates can I eliminate then?

The candidates that become impossible when answering both questions, can be safely removed.

Practical example

Technique 25

In this example, the player would have a typical Sudoku X-Wing row pattern if the cells highlighted in orange did not have the number 5 as a candidate. Since they do, one of the requirements to apply this technique is not met.

However, it is possible to use the Finned strategy, since the orange cells, or fins, are restricted to one group.

The players must then ask themselves:
1. If the solution for number 5 lies in one of the orange cells, which candidates can I eliminate?
2. And what if the regular X-Wing pattern applies?

In this case, only the 5 circled in red would be eliminated when answering both questions.

Technique 26

"Sashimi X-Wing" technique.

The Sashimi pattern is very similar to the traditional Sudoku X-Wing configuration. In this case, the player also finds one digit with only two possible solutions within two rows/columns.

Yet, one of the cells is not connected to another by row or column. As a result, the connection between these cells results in a crooked rectangle or square.

As with the Sudoku X-Wing, the player should then take each pair of digits diagonally opposite to each other and test them on the grid. The candidates that become impossible with both sets, can be eliminated.

Practical example

Technique 26

Looking at this grid, the player finds two columns with only two possibilities each for number 3. While the cells highlighted in yellow seem to form an X-Wing pattern, the cell in orange prevents the formation of a perfect rectangle since it is not aligned by row.

However, the basic principle of an X-Wing still applies, because number 3 has only two possible solutions in each column. Since the two bottom cells are connected, the relations within the pattern work just the same as with a typical X-Wing, with two sets of possible solutions.

The main difference is that the player cannot immediately eliminate the 3s from the rows connecting to the base pattern. With the Sashimi technique, there is no shortcut. It is necessary to test both sets on the grid.

In this example, the 3 circled in red become impossible when both sets are applied, except for the one in row 2, column 7, which is the solution for that group. All the others can safely be eliminated.

The Sudoku X-Wing pattern is so common that the player may find several simultaneously during a game. They can be formed by different digits or by the same digit positioned in different rows or columns.
As long as the requirements for the use of this technique are met by each of the patterns, the player can apply it to all of them and thus reduce the number of candidates present on the grid even more.

BONUS

30 Free Sudoku Puzzles

Free Puzzles

Easy Puzzles

Puzzle 1

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

Free Puzzles

Easy Puzzles

Puzzle 2

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

Free Puzzles

Easy Puzzles

Puzzle 3

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

Free Puzzles

Easy Puzzles

Puzzle 4

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

Free Puzzles

Easy Puzzles

Puzzle 5

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

Free Puzzles

Easy Puzzles

Puzzle 6

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

Free Puzzles

Easy Puzzles

Puzzle 7

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

Free Puzzles

Easy Puzzles

Puzzle 8

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

Free Puzzles

Easy Puzzles

Puzzle 9

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

Free Puzzles

Easy Puzzles

Puzzle 10

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

Free Puzzles

Medium Puzzles

Puzzle 11

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

Free Puzzles

Medium Puzzles

Puzzle 12

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

Free Puzzles

Medium Puzzles

Puzzle 13

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

Free Puzzles

Medium Puzzles

Puzzle 14

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

Free Puzzles

Medium Puzzles

Puzzle 15

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

Free Puzzles

Medium Puzzles

Puzzle 16

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

Free Puzzles

Medium Puzzles

Puzzle 17

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

Free Puzzles

Medium Puzzles

Puzzle 18

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

Free Puzzles

Medium Puzzles

Puzzle 19

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

Free Puzzles

Medium Puzzles

Puzzle 20

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

Free Puzzles

Hard Puzzles

Puzzle 21

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

Free Puzzles

Hard Puzzles

Puzzle 22

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

Hard Puzzles

Puzzle 23

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

Hard Puzzles

Puzzle 24

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

Free Puzzles

Hard Puzzles

Puzzle 25

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

Free Puzzles

Hard Puzzles

Puzzle 26

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

Hard Puzzles

Puzzle 27

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

Free Puzzles

Hard Puzzles

Puzzle 28

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

Free Puzzles

Hard Puzzles

Puzzle 29

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

Free Puzzles

Hard Puzzles

Puzzle 30

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

Free Puzzles

Solutions

Puzzle 1

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

Puzzle 2

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

Puzzle 3

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

Puzzle 4

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

Puzzle 5

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

Puzzle 6

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

Free Puzzles

Solutions

Puzzle 7

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

Puzzle 8

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

Puzzle 9

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

Puzzle 10

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

Puzzle 11

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

Puzzle 12

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

Free Puzzles

Solutions

Puzzle 13

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

Puzzle 14

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

Puzzle 15

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

Puzzle 16

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

Puzzle 17

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

Puzzle 18

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

Free Puzzles

Solutions

Puzzle 19

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

Puzzle 20

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

Puzzle 21

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

Puzzle 22

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

Puzzle 23

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

Puzzle 24

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

Free Puzzles

Solutions

Puzzle 25

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

Puzzle 26

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

Puzzle 27

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

Puzzle 28

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

Puzzle 29

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

Puzzle 30

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