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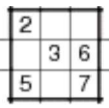
Naked Candidates

From sudokuwiki.com, the puzzle solver's site



'Naked' in this context refers to all the remaining possble candidates on a cell which are going to be used in a strategy. The simplest such situation is a Naked Single - or the last remaining candidate on a cell. Generally speaking if you are making notes on a sudoku board you have reached a point where simple scanning of the rows, columns and boxes has brought you no futher solutions. But you will be finding plenty of Singles on the easier puzzles, and hopefully not too few on the hardest ones.

A Naked Single is exactly equivalent to saying "Ah Ha! Looking at that cell I can see every other number either in the same box, the same row or the same columns, it's the only number that can fit"

Hidden candidates, mentioned below with regard to Pairs and so on, also have a Hidden Single Equivalent. It occurs when you find a cell with lots of possible but you reason "well, X can't go anywhere else in either the row, column or box, so it must go here.

Naked Pairs

A **Naked Pair** (also known as a **Conjugate Pair**) is a set of two candidate numbers sited in two cells that belong to at least one unit in common. That is they reside in the same row, box or column.

It is clear that the solution will contain those values in those two cells and all other candidates with those numbers can be removed from whatever unit(s) they have in common.

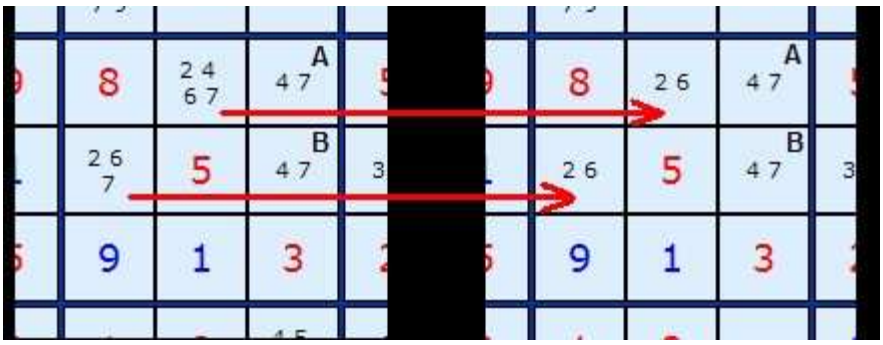


Figure 1

Consider this center box in Figure 1. There are two 4/7s at **A** and **B**. Two other cells contain 4s and 7s. We remove those to produce the right hand picture.

Figure 2 to the right is the same example but we're looking down the column at our two 4/7s at **A** and **B**. In the box below are two cells **C** and **D** which also contain 4s and 7s. We can safely remove the 4 from **C** and the 4 and 7 from **D**.

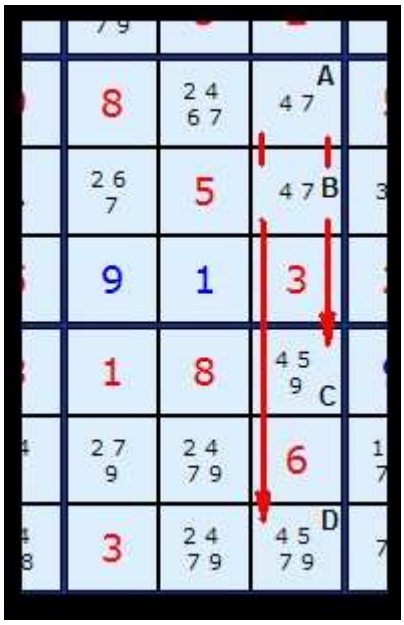


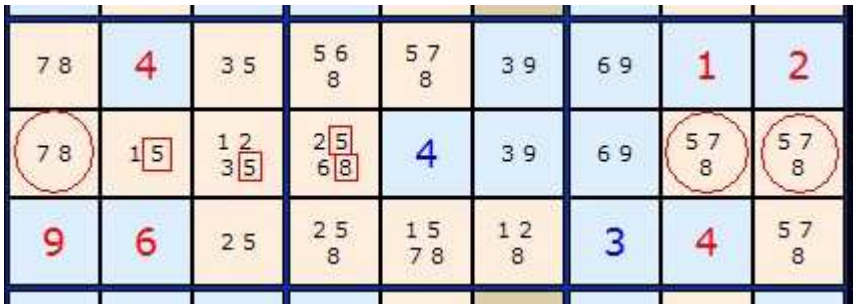
Figure 2

Naked Triples

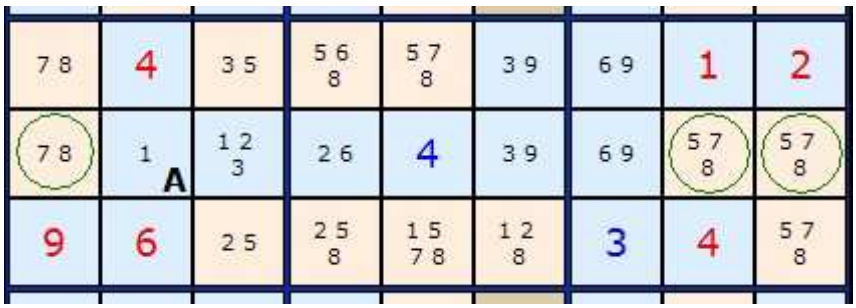
A **Naked Triple** is slightly more complicated because it does not always imply three numbers each in three cells.

Any group of three cells in the same unit that contain IN TOTAL three candidates is a **Naked Triple**.
Each cell can have two or three numbers, as long as in combination all three cells have only three numbers.
When this happens, the three candidates can be removed from all other cells in the same unit.

The combinations of candidates for a Naked Triple will be one of the following:
(123) (123) (123)
(123) (123) (12)
(123) (12) (23)
(12) (23) (13)
The last case is interesting and the advanced strategy XY-Wings uses this formation.
To see a Naked Triple in action look at this center strip from an example board:



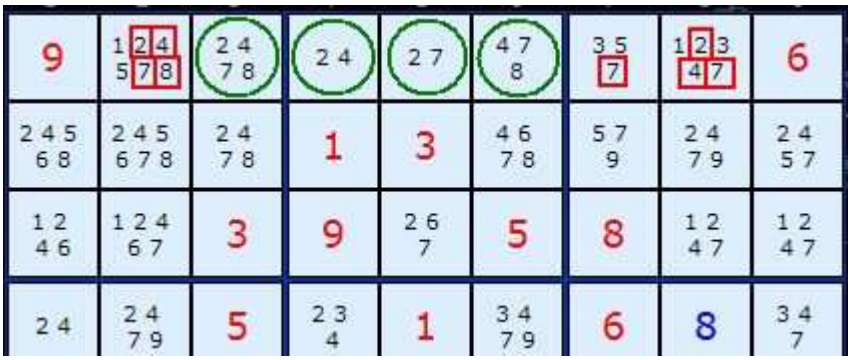
We have a triple in columns 1, 8 and 9. There are three other squares with 5,7 and 8 so we can clear them off leaving:



Naked Quads

A **Naked Quad** is rarer, especially in its full form but still useful if they can be spotted. The same logic from Naked Triples applies.

We have a Naked Quad arranged nicely together in the top row. Because we have 2/4/7/8 in columns 3, 4, 5 and 6 (marked in green circles) we can clear all other occurrences from the row (marked in red squares).



Naked Quad Example: Load Example or : From the Start

Next Article: Hidden Candidates

Comments...

Sunday 16-Aug-2009

... by: Curt Klemenz

I'm in same boat...having ultimate difficulty spotting hidden pairs and triples. When they are pointed out, ... I see them.

I suspect there is a mental algorithm for focusing attention toward the specific candidates, but no luck so far.

Anyone with a suggestion that's willing to share?

Saturday 6-Jun-2009

... by: Rockmelon

I have been an accountant for 35 years (which means nothing) and I can't see the relationships among these numbers! I have a really difficuolt time understanding this and I love to do Sudoku!

Any suggestions??

Tuesday 12-May-2009

... by: maurice ackroyd

Please modify your text so that the triple 5,7,8 is shown both before AND after 'removal'. The situation at present (12 May2009) is confusing. Thanks.
Also, can you point to a strategy for 'manua'l sudoku solving. By which I mean without unnecessary entering of all possible candidates. - all very well if you have a computer solver and don't mind entering a puzzle in its entirety.
Thanks again.

Sunday 10-May-2009

... by: BobCarl

As you know, any row, column or box contains nine cells.

When there are only 3 different numbers that can fit into three of the nine cells, that automatically eliminates their use in the remaining six cells. Hence, they can be removed as candidates from those "other cells".

Monday 20-Apr-2009

... by: buc

Re naked tripple: I would appreciate you explaining the logic of removing any of the three candidates from other cells.

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