Vitreous – Full Solution Guide

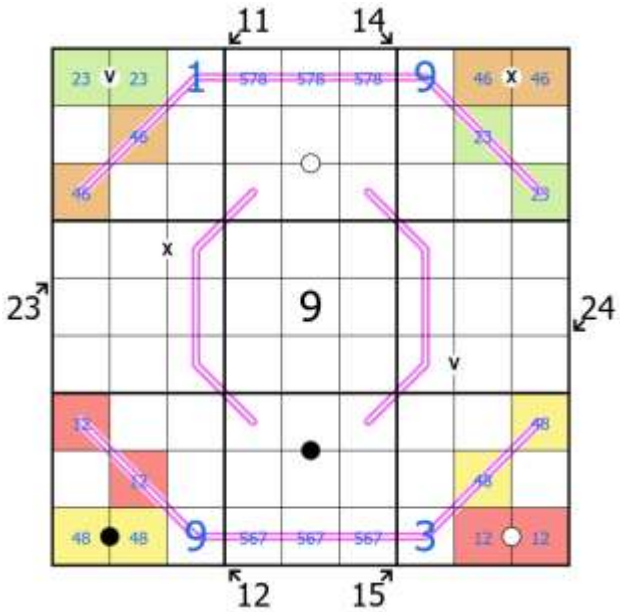
This is a full solution guide to my puzzle *Vitreous*, and so spoilers are ahead.

Rules

- Normal sudoku rules apply: Place the digits 1 to 9 once each in every row, column, and 3x3 box
- **Renban**: A magenta renban line must contain a non-repeating set of consecutive digits in any order
- **Little Killer**: Clues outside the grid give the sum of the digits on the indicated diagonal
- **XV**: Cells separated by an X sum to 10. Cells separated by a V sum to 5
- **Kropki**: Cells separated by a black dot contain digits where one is double the other. Cells separated by a white dot contain consecutive digits
    - Not all XV or dots are necessarily given

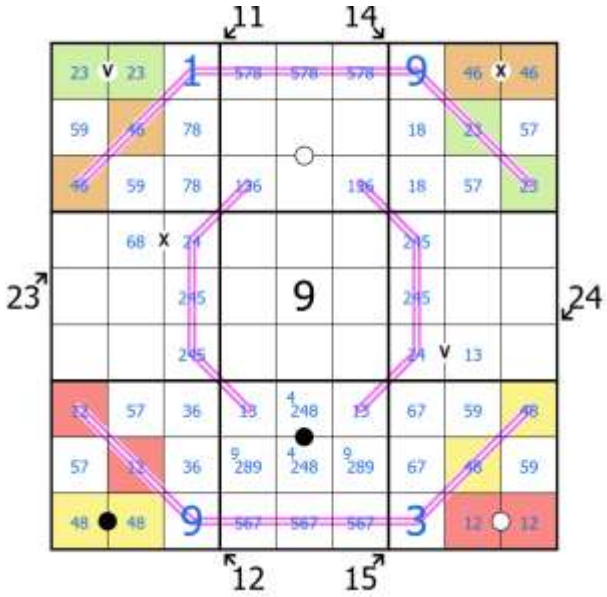
Solve Path

- A 9 cell renban must contain all of the digits 1 to 9. Similarly, each row and column contains all of the digits 1 to 9. So, where are R3C1 and R2C2 in row 1? They can only go on the X, and thus sum to 10. This gives us a 1 in R1C3
- Similarly for R2C8 and R3C9, which sum to 5 giving us a 9
- Similarly for R8C8 and R7C9 which are on the black dot in box 7. Here we have options, 24 makes R9C7 a 9, ruled out by sudoku. 36 makes R9C7 a 6 repeating the 6, so 48 with a 3 is the only option
- By equivalent logic R7C1 and R8C2 are a 12 pair with R9C3 a 9
- Leaves 578 triple in R1 and 567 triple in R9

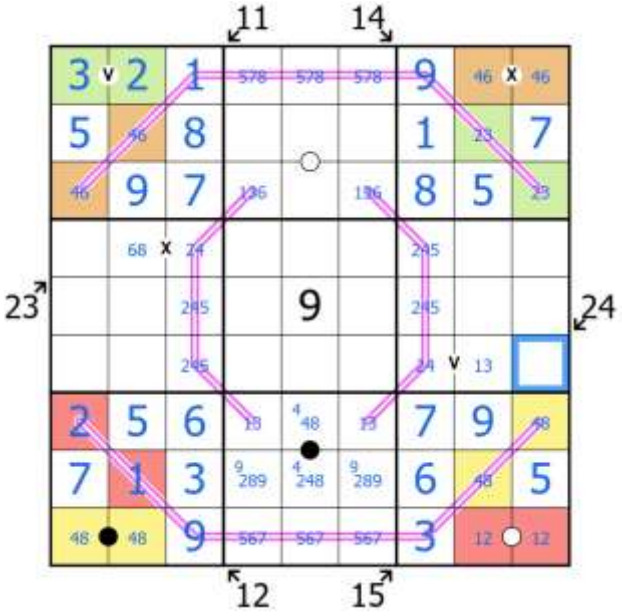


- By sudoku, 2 and 4 are forced on to the renbans in C3 and C7
- A 5 cell renban must contain a 5, and these can't be in box 2 or box 8
- Hence we have 245 triples in C3 and C7, and then R3C4, R3C6, R7C4, R7C6 are from 136
- 5 not on the V or X in box 4 and 6
- By sudoku, we can pencilmark pairs into boxes 1, 3, 7, 9

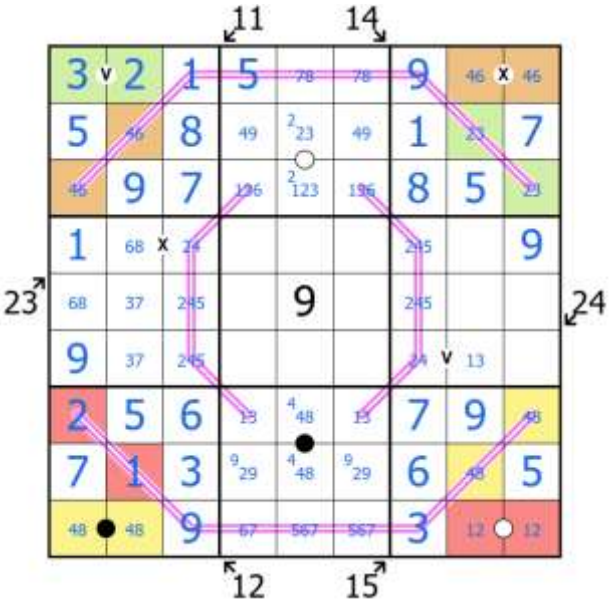
- Box 8 black dot is 24 or 48, and 9 is limited to row 8



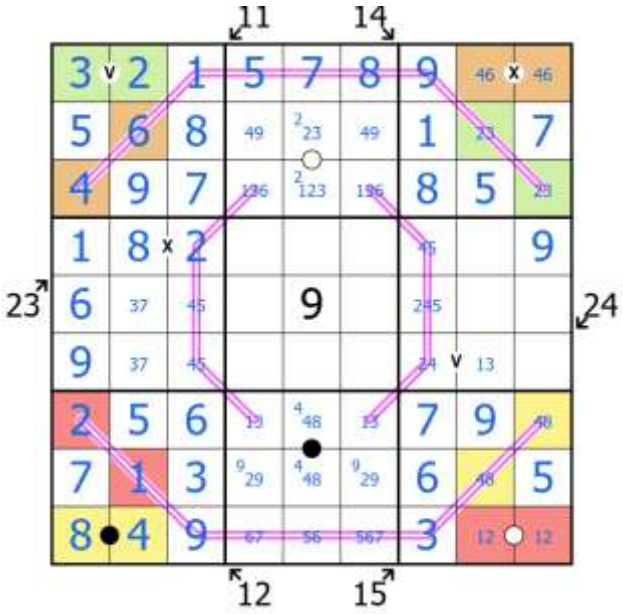
- By pointing 9, or 13 pair in box 8, we can resolve most of the pairs



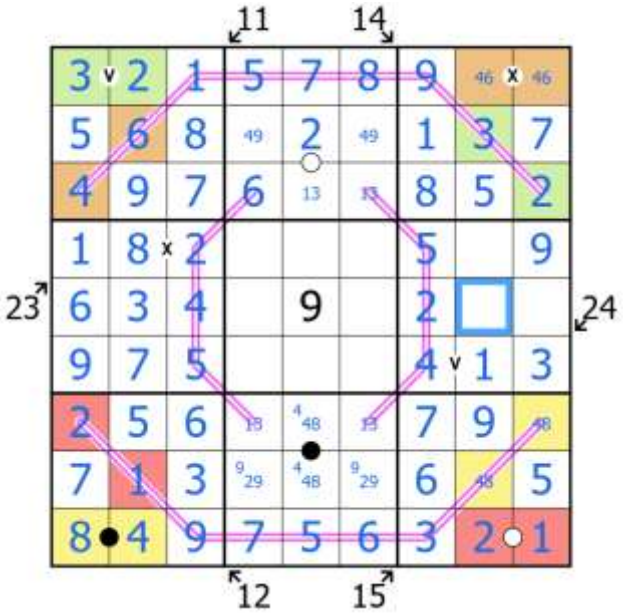
- 23 little killer now contains 8 and 9, so remaining cells sum to 6 and are thus minimised
- 9s placed in box 4 and 6
- 49 pair in box 2, leaves 12 or 23 for the white dot in box 2



- 49 pair in box 2 resolved 46 in box 1, resolving X in box 4 and various other bits of sudoku



- 24 little killer contains 6 and 9 so remaining cells sum to 9. By available digits in box 6, only a 3 and 6 work



- Remainder resolves by sudoku

