Bully's Prize Board – Full Solution Guide

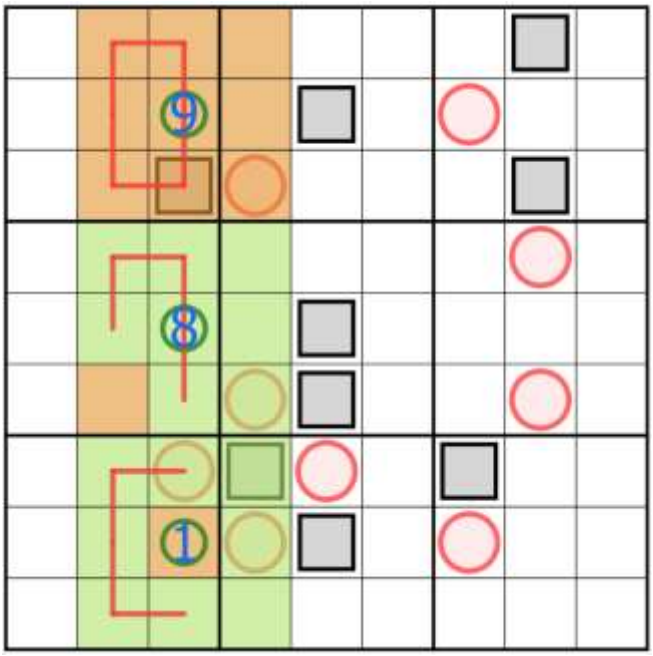
This is a full solution guide to my puzzle *Bully's Prize Board*, and so spoilers are ahead.

Rules

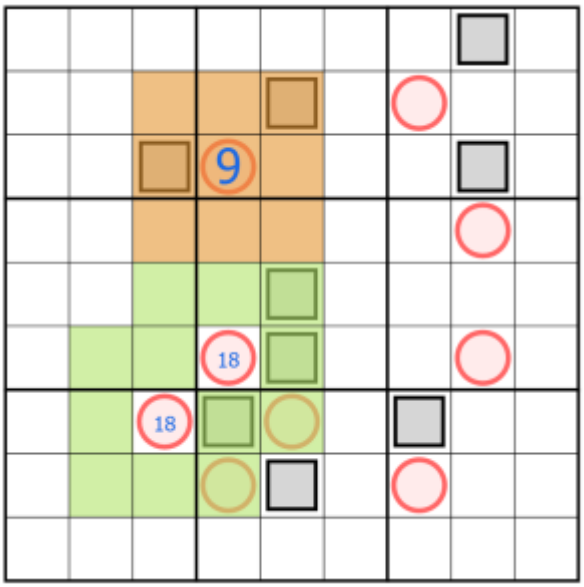
- Normal sudoku rules apply: Place the digits 1 to 9 once each in every row, column, and 3x3 box
- **Parity Sweepers**: A digit in a red circle counts how many of the up to 9 surrounding cells have the same parity as the digit in the circle, including counting itself. (E.g. if a circle contained a 6, then 5 of the 8 cells that touch orthogonally or diagonally must contain an even digit, in addition to counting the 6 itself)
- **Not Parity Sweepers**: A digit in a black square does not count how many of the up to 9 surrounding cells have the same parity as the digit in the square, including counting itself. (E.g. if a square contained a 6, then we must not have 5 of the cells that touch orthogonally or diagonally containing an even digit)
- **Extra Region**: Every circle contains a different digit. Every square contains a different digit

Solve Path

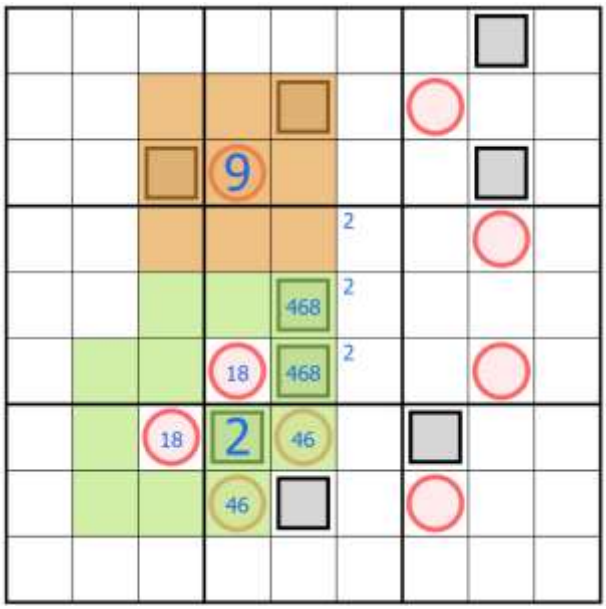
- There are 9 squares and 9 circles, so the digits 1 to 9 appear once each in a square and a circle
- Where are 1, 8 and 9 in circles? If they are on the edge of a 3x3 box but not in a corner we get an issue. 1 and 8 place 5 evens into one box. 9 places 6 odds into one box



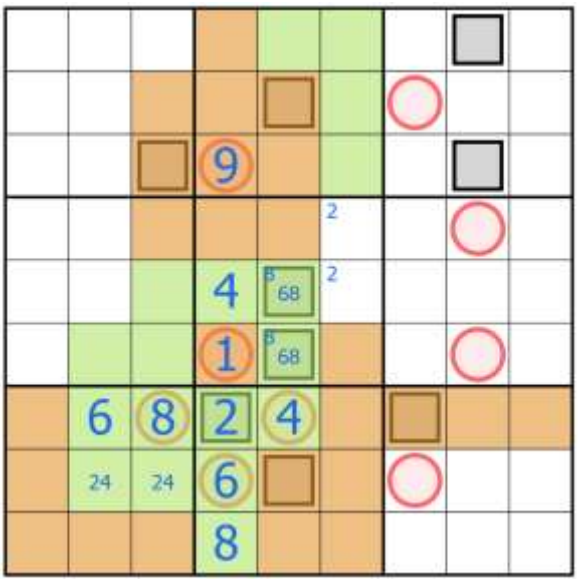
- Hence 1, 8 and 9 in circles can only go in the corner of 3x3 boxes, and we have exactly 3 in R3C4, R6C4 and R7C3



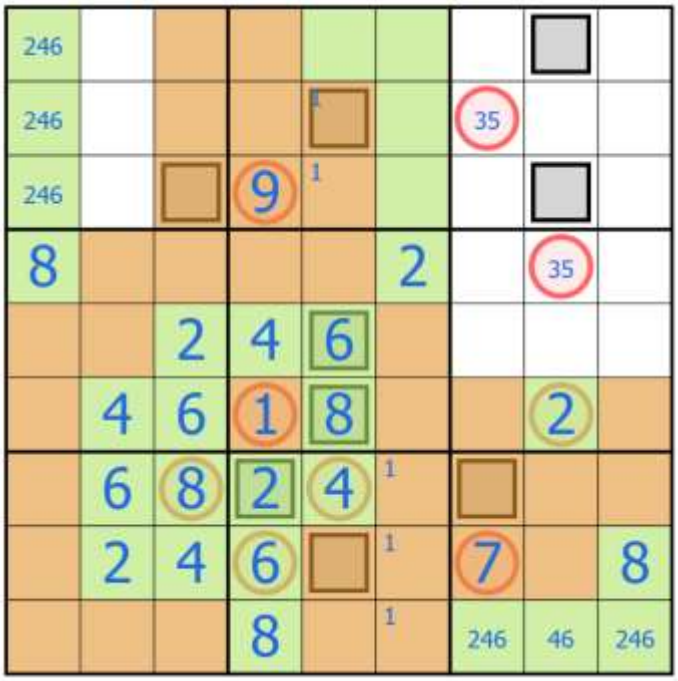
- R7C5 and R8C4 are both even, not 8 by disjoint, and not 2 as they already have 4 surrounding evens, so these are a 46 pair
- R7C4 is even and sees 4, 6 and 8, so it is a 2
- 2 in box 5 is in column 6 as it can't repeat in a square



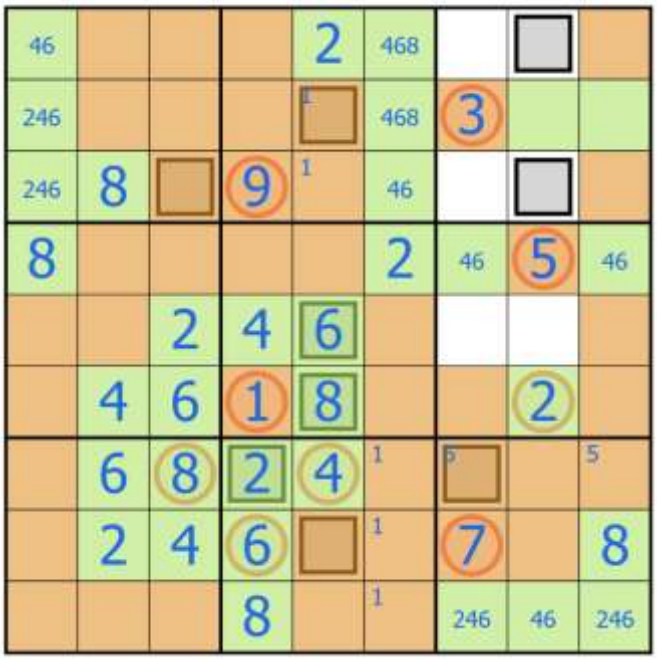
- Box 5 has fulfilled its count of evens, so R6C4 must be a 1, and R7C3 an 8
- R8C4 now has 5 evens surrounding it, so this must be the 6 and R7C5 the 4
- Can shade box 7 and 8, and columns 4 and 5, by count of evens



- R8C7 can't be even, as this would make it an 8 but it has 5 odds surrounding already
- Hence this is odd, and already sees 6 odds, so it is a 7
- Rest of row 9 can be shaded
- R6C8 is from 235. Rows 5 and 6 already have 3 evens, so can only place 2 more in total into box 6 in these two rows
- Only option that works by count of evens is R6C8 being a 2



- R4C8 is from 35. R4C79 are both even by count in the row. If R4C8 were a 3, its count of odds would be fulfilled entirely in box 6, and R3C789 would all need to be even, which breaks row 3
- Hence R4C8 is 5, and there is only one even in R3C789, so the last even for row 3 is R3C2
- Can shade box 1
- Leaves R2C7 to be a 3



- Can fill out options for the squares
- Only two squares that can accommodate a 4 are R1C8 and R3C8

- 4 in squares points down column 8, making R9C8 a 6, R2C8 an 8, and finishing the shading in the rest of column 8

- 5 in box 5 points into box 8 and then into box 2, leaving R2C5 to be 17, and R3C5 to be 137
- 3 in squares can only go in R3C3 or R8C5 which both see R3C5
- Gives a 17 pair in box 2, and resolves 3 and 5 in the box

- R3C8 sees an unorthodox 17 pair in box 2. This leaves only 4, which allows the shading to be completed

- At this point, we can resolve the puzzle using standard extra region sudoku. Making R8C5 a 5 forces 9 into R1C8, 1 into R7C7, and places two 3s into box 8
- However, the intended approach is to use the rule about black squares that they can't contain the number of surrounding cells of the same parity, and remove 5 from R8C5

- Standard sudoku to finish


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