Zoomies – Full Solution Guide

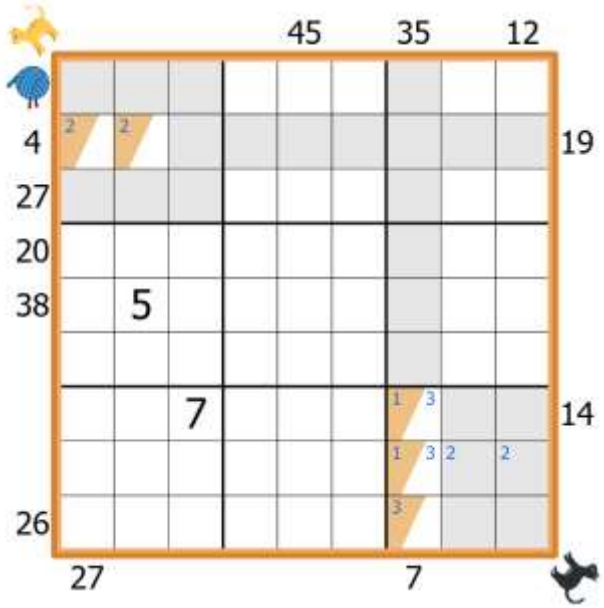
This is a full solution guide to my puzzle *Zoomies*, and so spoilers are ahead.

Rules

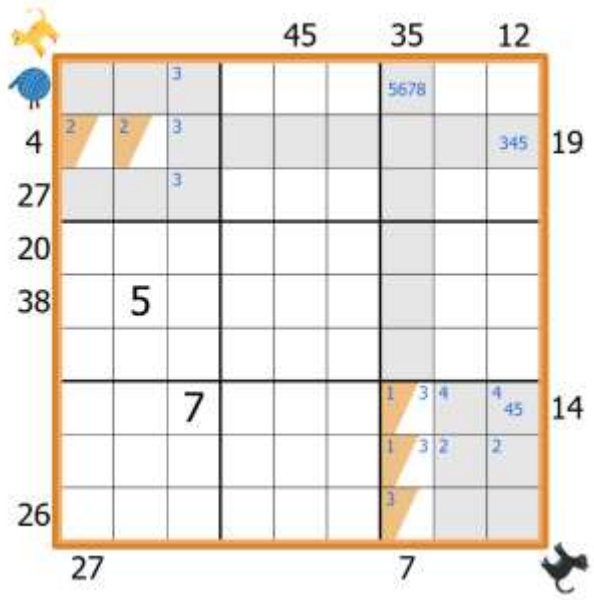
- Normal sudoku rules apply: Place the digits 1 to 9 once each in every row, column, and 3x3 box
- **Copycat:** 9 cells in the grid are copycat cells, one in every row, column, and 3x3 box, each containing a different digit. The value of a copycat cell is the digit in the cell 180 degrees opposite around the center of the grid. For example, if R2C3 was a copycat cell, then its value is the digit in R8C7
- **X-Sums**: Clues outside the grid give the sum of the first X values in that row or column, where X is the value in the first cell
- **Cat and Yarn**: Are just chilling

Solve Path

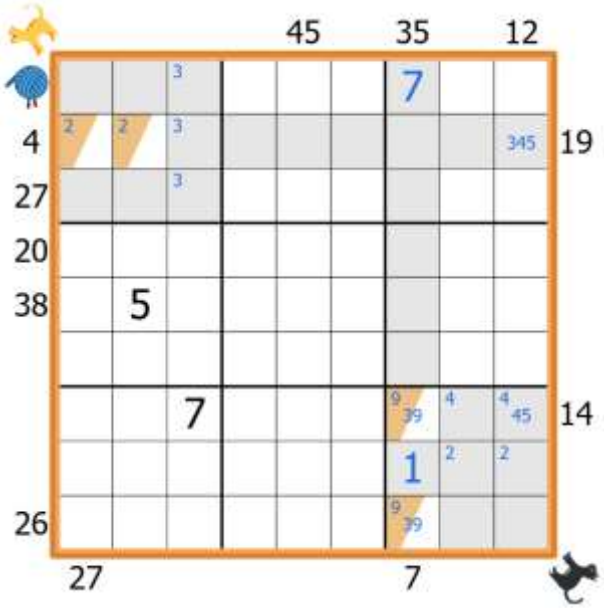
- X-Sum of 4 is impossible as it can only be made with a pair of 2s, so in this puzzle the 4 clue must be fulfilled by copycat shenanigans. R2C12 are a natural 2 and a copycat, copying a 2 from R8C89
- X-Sum of 7 with natural digits can only be 25. As 2 is taken in box 9, this must be fulfilled with shenanigans, and must be a 3 with a 13 pair, thus copying a 3 from box 1



- X-sum of 14 is fulfilled by either an X of 4 or 5. 5 would require copycat shenanigans in R7C56
- If R7C9 is a 5, it must have a 4 after it otherwise the sum gets too big even with copycat, so 4 is in R7C89
- 19 clue has X of 3 4 or 5
- 35 clue has X of 5 6 7 or 8



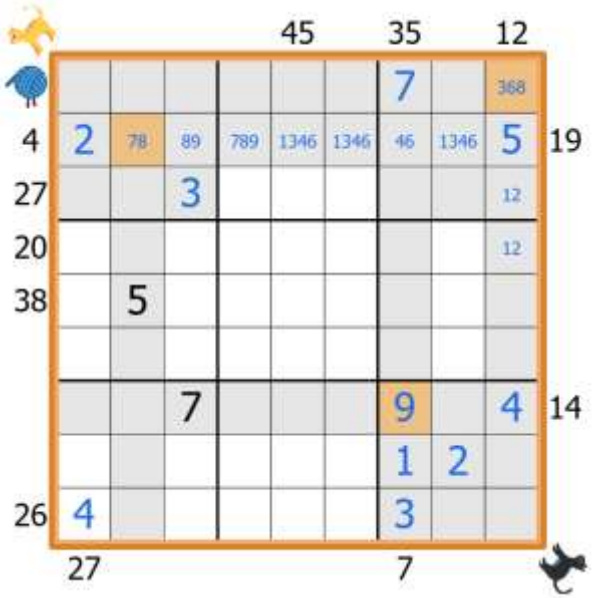
- Considering R1C7, 8 is impossible. It would require a copycat in R78C7, leaving a natural 3 in R9C7. But to make the column add up we would need to swap out a value 7 higher than the digit swapped in from box 1, and that means the copycat cell in box 9 would need to contain a 10
- 6 is impossible as the 6 cells would sum to 35 using natural digits, leaving the copycat in box 9 to be a repeat 6
- 5 is impossible as this would be natural 56789 leaving nowhere for both 2 and 4 in column 7
- Hence this is 7
- Natural 1 in R7C7 would need 3 and 7 in box 9 column 7 which repeats the 7, so 1 is placed
- To make the column add up the copycat in box 9 contains the digit 9



- If R2C9 were 3 it would be exactly 379, repeating the 7 in the box
- Hence R2C9 is from 45 making a 45 pair in C9

- Considering R1C9, if this is natural it can only be a 3, but this would require a 45 pair in R23C9 or R2C9 + R7C1 using copycat, and in both cases this breaks R7C9
- Hence R1C9 is copycat, and can't copy in a value of 3 for similar reasons. By available sums R9C1 is a 4, and 12 X-Sum is value 4 followed by 4 with a 13 pair or 5 with a 12 pair

- Consider 26 X-Sum. If R9C7 were a copycat cell this would contain the digit 9, leaving R9C1234 to be maximum natural 4678 which is only 25
- Hence R9C7 is natural 3, R7C7 is copycat 9
- Forces R7C9 to be 4 as no copycat shenanigans available
- Makes R2C9 a 5, and R34C9 a 12 pair
- Places 2 in box 9 which places copycat in box 1
- 19 X-Sum is 5 followed by 1346 quad, leaving 789 triple



- Can R9C1 be copycat? No, as it would copy in value of 3, 6 or 8. 3 and 8 are trivially impossible. Copying in a 6 would mean that 6 values sum to 26, which leaves at least 19

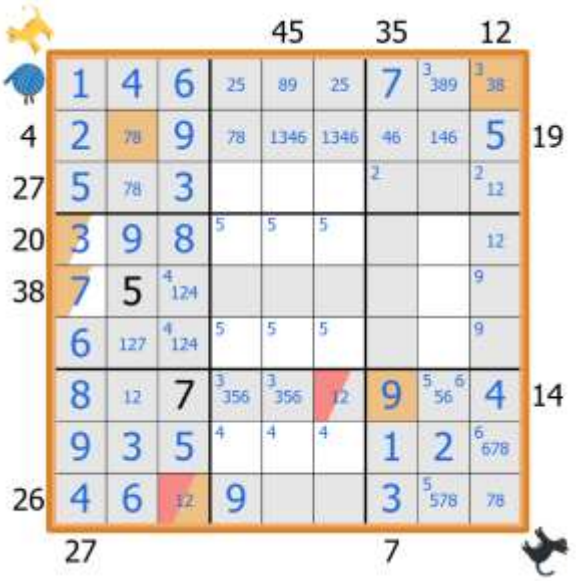
outside the sum in R9C789. With a 3 and no 9 available, this is impossible, and swapping out a 4 for a 6 only makes the math worse

- Hence R9C1 is a natural 4, which is a bit spicy
- R7C6 and R7C8 sum to 7
- Consider where R7C6 goes in R9. It must be part of the 26 X-Sum, hence is the copycat and is in R9C3
- This takes value 7, so R9C2 and R9C4 sum to 15
- R1C5 can be pencilmarked here as 89. 9 would be possible if R5C5 if a copycat leaving the column value unchanged. Otherwise this is 8 and the copycat accounts for the difference in the column

- R9C2 and R9C4 must be a 69 pair as 78 breaks box 9 in some way
- R6C1 can't be copycat as copying in a 2 doesn't help get to sum of 27. R678C1 are a 689 triple which reduces slightly
- Leaves 1357 quad, with the 3 in box 4 and 5 in box 1

- R5C1 isn't 3. This would need to be a copycat but would leave natural 1 or 7 to sum to 20 which is daft
- Hence R4C1 is 3. This could still be a copycat cell, but the only useful digit it could take would be another 3 from R6C9, hence R4C23 are an 89 pair
- Resolves the 689 triple, the 69 pair and then places 9s in box 1 and 4
- Lots of sudoku follows

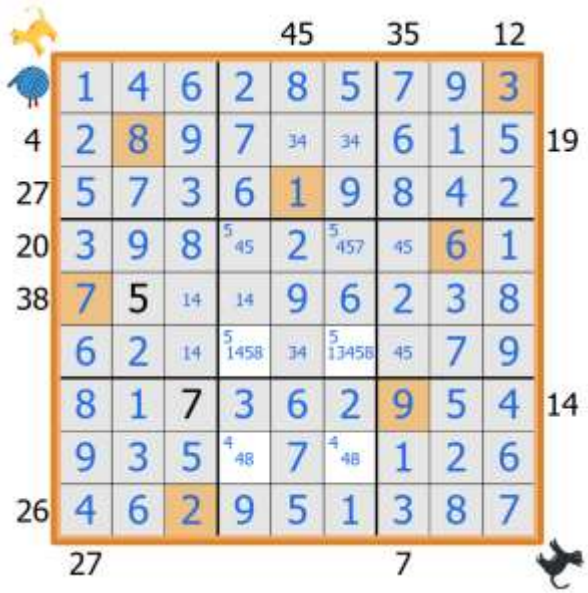
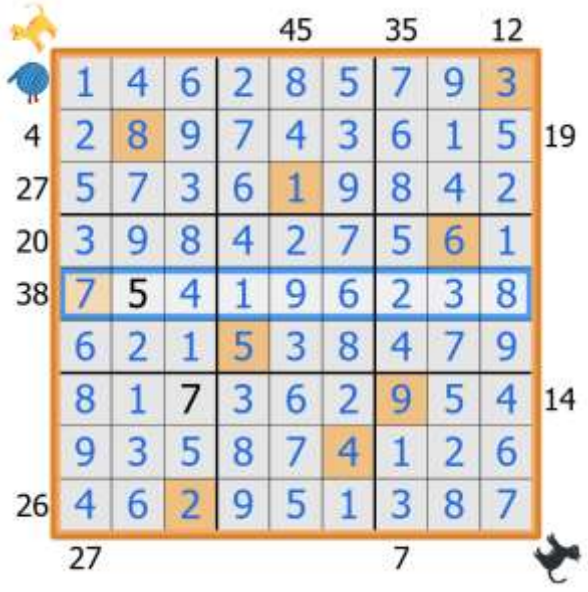
- Can R3C1 be 7? Due to the 12 in C9, this is minimum 1345678 = 34 as digits. Making R3C1 a 7 makes R2C2 an 8 in copycat, and since 8 and 9 are used in copycat it is not possible to swap out a big enough value and swap in a small enough value to make the sum work
- Hence R3C1 is 5 which has quite a few options with and without copycat
- R45C1 are now 3 and 7, of which one is a copycat. In box 1, 3, 4 we have a 378 triple in copycat
- 8 in that 378 triple sees R1C2 making this a 4



- We have 1 2 4 5 6 left to find in copycat. Where is 5? It isn't in box 2, box 8, nor box 6 by the 5 pencilmarks
- Hence 5 in copycat is in box 5
- By the given 5 this means R5C456 are not copycat
- This means R1C5 must be 8, resolving the copycat 378 triple

- Makes R5C1 a copycat 7. This can only sum correctly by R5C9 being 8
- Resolves many digits in box 9, including making R9C3 a copycat 2
- Only box for copycat 4 is box 8
- Only box for copycat 6 is box 6, and this is placed
- Leaving copycat 1 to go in box 2

- Either considering the 45 X-Sum, the copycat and the digit it copies must differ by 5 (the value in R9C5), or by considering how to make the remaining 12 in the 27 X-Sum we learn that R3C5 is copycat 1, copying 6 from R7C5



- Considering where the copycat 5 is in box 5 resolves the remaining sudoku