

Floor 47 – Full Solution Guide

This is a full solution guide to my puzzle *Floor 47*, 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
- Each digit appears twice in clues outside the grid. One of these is a skyscraper, one of these is a numbered room
 - **Skyscraper**: Counts how many digits are seen from the direction of the clue; digits are only seen if they are the highest digit encountered so far
 - **Numbered Room**: The digit outside the grid is placed in the Nth position from the direction of the clue, where N is the digit in the first position

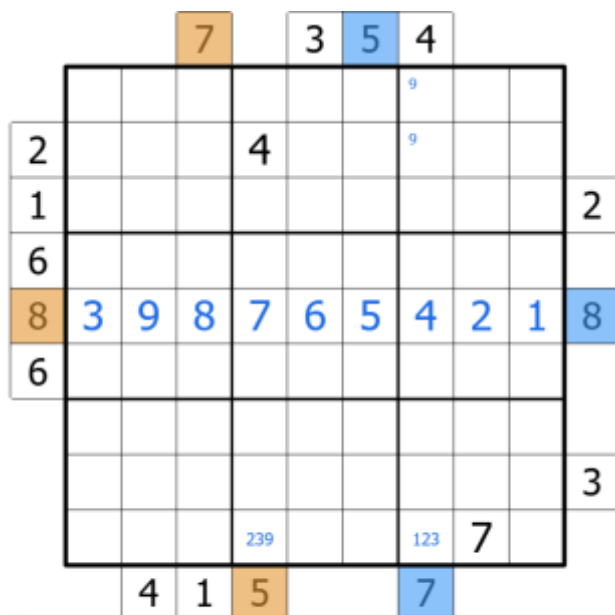
Solve Path

- The two 8 clues pointing at each other are entirely forced, with symmetry. The skyscraper 8 must have the 9 in position 8 or 9, but 9 would put a 9 against the opposite numbered room clue which would not index the 8 correctly
- We can pencilmark these options and show R5C5 is always a 6

			7		3	5	4		
2				4					
1									2
6									
8	13	29	48	57	6	57	48	29	13
6									
									3
								7	
	4	1	5				7		

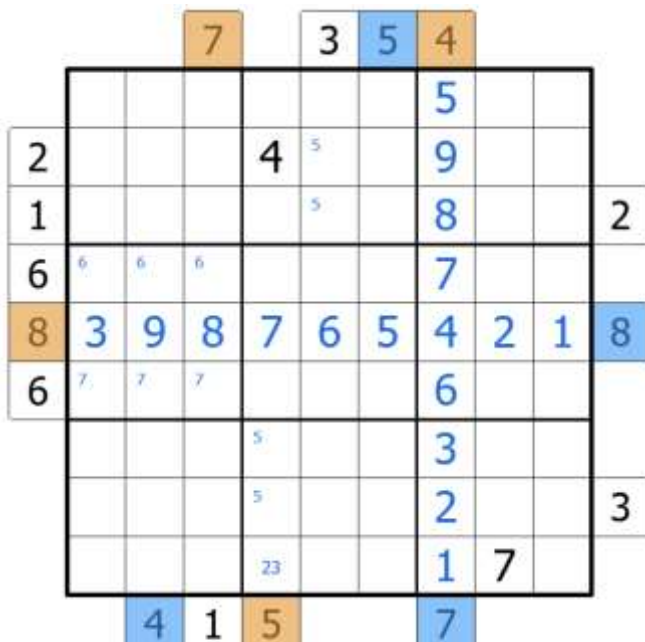
NOTES

- One of the 6 clues in a skyscraper. Could the 9 appear in column 6? No, as before this we could place 8, 3, 2, 1 and then we run out of digits. Hence the 9 must be in box 6
- Resolving the order of row 5
- C6 clue must be a skyscraper 5 otherwise we duplicate 5 in the column, so C4 clue is a skyscraper
- C3 7 clue must be a numbered room as the 8 occurs too soon, so C7 7 clue is a skyscraper and roughly places 9 in column 7 in box 3



NOTES

- C7 4 clue can't be a skyscraper by placement of the 9, so it a numbered room
- This forces the entirety of column 7
- R9C4 is reduced to 23 by sudoku and placement of existing 5s



NOTES

- 6 and 7 can be pencilmarked in box 4

- R6 clue can't be skyscraper as the 7 occurs too soon, so is a numbered room
- Numbered room is resolved
- R4 clue is a skyscraper, and the 6 pencilmark means we must see 6, 8 and 9 in addition to the 7, and the first two cells in the row

2				4	5		9			
1					5		8			2
6	124	5	6				7	8	9	
8	3	9	8	7	6	5	4	2	1	8
6	7	124	124				6	35	35	
				5			3			
				5			2			3
				23			1	7		

4 1 5 7

NOTES

- R3 2 clue can't be a skyscraper as the 8 and 9 will be visible in addition to R3C9
- Means R2 2 clue is a skyscraper, and as the 8 can't hide behind the 9, 8 is placed in R2C1
- R3C9 numbered room can be pencilmarked as 467
- In addition R1C3 numbered room can be pencilmarked as 23 and the 7 is roughly placed in the column
- By logic on the C2 4 clue, 8 and 7 must be visible in addition to R9C2

			7		3	5	4		
			23				5		
2	8		7	4	5		9		
1			7		5		8		467
6	124	5	6				7	8	9
8	3	9	8	7	6	5	4	2	1
6	7	124	124				6	35	35
	8		5				3		
	7		5				2		3
	2346		23				1	7	
	4	1	5				7		

NOTES

- Remaining 1 and 3 clues can be pencilmarked. One of the 1 clues is a skyscraper and immediately sees a 9. Means that R789C1 can't be 9 and 9 is roughly placed in box 1 and 7
- By sudoku R1C5 is from 123789, R8C9 is from 4568
- 8 in R8C9 doesn't work for either skyscraper or numbered room, reducing to 456
- 2 in row 3 can't go in R3C3 is the 7 numbered room clue is broken, so 2 in row 3 is in R3C4 or R3C6 and removing 2 as an option from R1C56
- (NB: At this point you can also show that R3C1 isn't 4 or 6 as this would try to place 1 and 2 in the same indexed cell)

			7		3	5	4		
			23		13789	13	5		
2	8		7	4	5		9		
1	9	14569	7	2	5	2	8		46
6	124	5	6				7	8	9
8	3	9	8	7	6	5	4	2	1
6	7	124	124				6	35	35
	8	9	5				3		
	7	9	5				2		456
	2346	9	2349	23			1	7	
	4	1	5				7		

NOTES

- At this point, one of the 3 clues is a numbered room. If R1C5 then this is from 789 placing 3 in box 8. If R8C9 then this is from 456 placing 3 in box 8
- Hence R9C4 can't be 3
- (It is also possible to case test R8C9 and show that all option fail for a numbered room clue)

			7		3	5	4			
	9		23		13789	13	5			
2	8		7	4	5		9			
1	14569		7	2	5	2	8		46	2
6	124	5	6				7	8	9	
8	3	9	8	7	6	5	4	2	1	8
6	7	124	124				6	35	35	
	8	9	5				3			
	7	9	5				2		456	3
	346	349	2				1	7		
	4	1	5				7			

NOTES

- 8 is placed in box 9
- 5 is placed in row 9
- 456 triple in column 9 resolves 35 in box 6 and leaves 27 pair in box 3

			7		3	5	4			
	9		23		13789	13	5		27	
2	8		7	4	5		9		27	
1	1469		7		5	2	8		46	2
6	124	5	6				7	8	9	
8	3	9	8	7	6	5	4	2	1	8
6	7	124	124				6	5	3	
	8	9	5				3	469	5456	
	7	9	5				2	469	5456	3
	5	346	349	2			1	7	8	
	4	1	5				7			

NOTES

- Placing the 5 in R8C4 and the 2 in box 2 resolves the 456 in column 9
- Now it is easier to see that R8C9 can't be for a numbered room clue, so this is a skyscraper
- Means R8C8 can't be 3
- Forces R1C5 to be for a numbered room clue, which is down to 89

		7		3	5	4			
	9		23		89	13	5	136	27
2	8		57	4	5		9	136	27
1	9	169	57		5	2	8	136	4
6	124	5	6				7	8	9
8	3	9	8	7	6	5	4	2	1
6	7	124	124				6	5	3
	8						3	9	5
	7	9	5	3			2	4	6
5	346	9	349	2	3		1	7	8
	4	1	5				7		

NOTES

- R8C1 is a naked 1
- R3 1 clue can't be a numbered room as no valid indexing locations exist, so this is a skyscraper and places the 9
- R9C3 is for a numbered room, 1 is placed in box 4, and R9C3 has to be a 4 to index it

		7		3	5	4			
			23		89	13	5	136	27
2	8		57	4	5		9	136	27
1	9		57		5	2	8	136	4
6	24	5	6		2		7	8	9
8	3	9	8	7	6	5	4	2	1
6	7	24	1		2		6	5	3
	8	2					3	9	5
1	7	9	5	3	8	8	2	4	6
5	36	4	2	39	69		1	7	8
	4	1	5				7		

NOTES

- A fair bit of sudoku follows at this point
- (You can also see that 7 in C6 has to be in box 8 to avoid breaking the 5 skyscraper)

NOTES

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

NOTES
