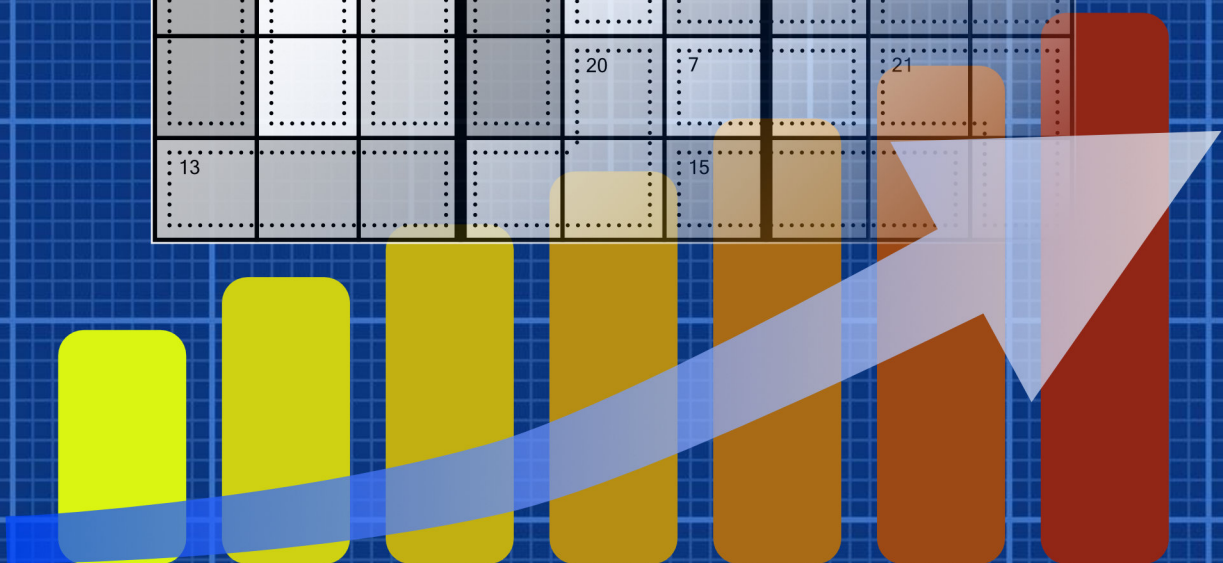


THE KILLER SUDOKU CHALLENGE

14		5	17	17		13	12	
8	9			33				
		17						
23			11			9	9	11
		16	10		30			
12	14					9		13
		13	4					
				20	7		21	
13					15			



SPECIFICATIONS:

No of puzzles : 7

Difficulty Levels : 4 (Easy to Extreme)

Tutorial, Cheat Sheet, Skill Tracker, Solutions

Killer Sudoku Challenge

Welcome

Greetings! You've just taken the first step in proving your puzzling prowess. This free challenge pack is our gift to you; carefully curated puzzles that grow in difficulty as you go. They're designed not just to entertain, but to test your logic skills, sharpen your solving strategies, and perhaps teach you a trick or two along the way.

Each page gives you space to log your start and finish time, so you can track your speed as well as your success. And with the *Skill Tracker*, you'll be able to monitor your progress and spot areas for improvement.

We're passionate about puzzles here at *Puzzle Genius*. We obsess over the details to make every puzzle the best it can be. It's why our Killer Sudoku grids look a little different. We subtly shade our cages to make them easier to see, so you can use your brainpower for solving the puzzle rather than trying to decipher it.

The puzzles in this challenge are rated for difficulty using our unique grading system. Each one has a difficulty score that reflects the techniques you'll need to use to solve it, as well as how quickly you can start getting numbers on the board. We're starting you off easy with a "0"-rated puzzle. Don't worry though, they get harder!

Contents

There's more than just puzzles in this challenge pack. You'll also find:

Solving Techniques

Killer Sudoku has some special techniques over and above those used to solve regular Sudoku, and we cover those on the next page.

Skill Tracker

Keep track of how long each puzzle takes you, whether or not you used assistance, and the solving techniques you've used in this checklist and tracker.

Cheat Sheet

We've included a full copy of our limited sum and required digit cheat sheet right here in the pack for your convenience.

Solutions

The quickest way to check your answers is against the solutions in the back. They're definitely not there in case you get stuck...honest!

Resources

We have more resources to help you in your quest to solve these puzzles, at PuzzleGenius.org :

Sudoku From Scratch

Solving Killer Sudoku requires some specialised techniques, but you also need to understand how to complete a good old regular Sudoku, too. If you want to brush up your skills, or are just starting out, then our comprehensive three-part [Sudoku From Scratch tutorial](#) should be the first step on your journey.

Killer Sudoku From Scratch

Our [Killer Sudoku tutorial](#) covers all the rules and basic techniques you'll need to get started. There's a video tutorial too.

Calculator

If you want to shortcut some of the arithmetic involved in solving these puzzles, our Cheat Sheet is the perfect reference. We also have a dedicated [Killer Sudoku calculator](#) on our website. It has some extra features over and above the cheat sheet, such as being able to require or exclude numbers based on where you are in your solve.

Terminology

Before we move ahead and look at some solving strategies, let's just make sure we're all on the same page when it comes to Killer Sudoku terminology.

Row: A row of nine cells in a puzzle.

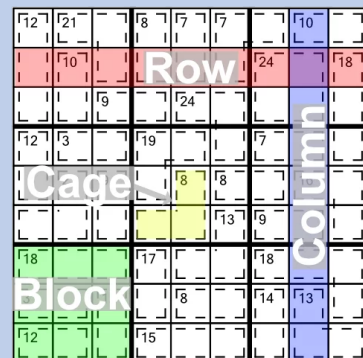
Column: A column of nine cells in a puzzle.

Block: A bolded 3x3 block of cells in a puzzle.

Cage: A dashed area within a puzzle.

Cage Target / Target Sum: The number that the digits within the cage must add up to.

Candidate Number: A number you have determined could be the valid entry for a cell but you aren't yet sure.



Solving Techniques

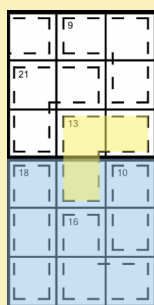
The 45 Rule

If there's one thing you need to know above all else when it comes to solving Killer Sudoku puzzles, it's the 45 rule. This states that the digits comprising every column, row, and block in a puzzle must add up to 45, because that's the sum of the digits 1-9.

The 45 rule can be applied in a number of ways. Sometimes it lets you solve a cell (or even multiple cells) immediately. Other times it won't solve a cell but will reduce the list of numbers that could go into a cell. Those candidate numbers can be combined with other techniques, including regular Sudoku methods, to solve other parts of the puzzle.

Innies and Outies

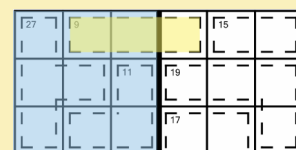
No, we're not talking about [Severance](#)! Innies and outies are the simplest way of using the 45 rule. When a cage crosses into or out of a row, column or block, you can use the rule to deduce the value of the parts that don't belong.



This blue block comprises three cages that are entirely contained within it (18, 16, and 10). Additionally, there is a yellow cell jutting in (hence "innie") from the 13-cage in the neighbouring block. If we add together the sums of the fully contained cages (18+16+10) we get 44. As we know the total sum of the cage must be 45, we can determine that the contents of the intruding innie cell must be 1 ($45-44=1$).

An outie is the same thing in reverse - a single cell that juts out of a row, column, or block. Here, one cell of the 9-cage is protruding out from the blue block. If we add

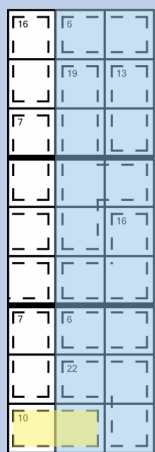
together the sums of all the cages in the block (27+9+11) we get 47, so we can deduce that the outie cell must contain 2 (because $47-45=2$).



The great thing about innies and outies is that they don't just apply to blocks, they work on rows and columns, too.

Combining Rows / Columns / Blocks

As puzzles get harder, you're less likely to find innies or outies in a single column, row or block. But you might have more luck if you combine them.



In this example we have two columns in which all the cages are contained within their entirety, and an innie cell poking in from the 10-cage in the neighbouring column. Adding together the cages in the two columns (6+19+13+16+6+22) gives us 82. As we know the total sum of those two columns must be 90 (two columns of 45 each), we can determine the contents of the innie cell must be 8 since the target of 90 minus the actual sum of 82 is 8. We can then solve the other cell in that 10 cage, which must contain a 2.

Combining rows and columns is useful, but combining blocks is even better because there are lots of ways of lumping them together to find innies and outies.

Multiple Outies

Multiple outies, while not immediately solvable, can still be useful. In this example the combined two blue blocks have two outies (the 13-cage and the 12-cage). Though we cannot solve them yet, they are useful. Adding up all the cages in the blue blocks (20+10+14+12+13+12+13+12) gives us 106. We can deduce that the combined value of the two outies is 16 (since $106-90$ is 16). Therefore we can deduce that one outie must contain a 7 and the other a 9 (the only combination to reach 16), so we can write those in as candidate numbers which may help progress other areas of the puzzle.



Multiple Innies

Multiple innies can also be useful in reducing candidate numbers. In this example, the two blue blocks have two different innies jutting in. The sum of the blocks (16+6+19+13+7+16) is 77, therefore we can deduce the sum of the two innies must be 13 (since $90-77=13$). That reduces the candidate numbers to 4-9, 5-8, or 6-7.

Multiple innies like this are sometimes called *pseudo cages*, because you can think of the two innies as forming their own cage given that we know their combined target sum (13).



Innie + Outie

In this scenario, you have a row, column, block (or combination of multiples), in which there is one innie and one outie. You can use the difference between the multiple of 45 and the sum of all cages to determine the difference between the innie and outie.

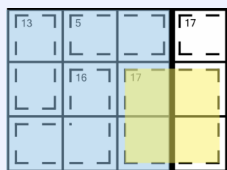
This blue block has an innie (from the 17-cage) and an outie (jutting from the 8-cage). If we add together all the sum numbers in the block (14+8+18) we get 40, which is 5 short of the required sum of 45. That means the numbers which go in the innie and outie cells must have a difference of 5. That way they will offset each other so that the block adds up to 45. Valid pairs that are five apart are 1-6, 2-7, 3-8 and 4-9, so these become our candidate numbers for the innie and outie cells. Of course, the fact the outie cage has a sum target of 8 further reduces the options.



Solving Techniques

Cage Splitting

While single-cell innies and outies are the easiest to use and usually allow you to solve at least one cell completely, innies or outies comprising multiple cells in the same cage can still be useful.



This 17-cage has two cells outside the block – a double-outie if you like. If we add all the cage sums together ($13+5+16+17$) we get 51. So we know that the contents of the two outie cells belonging to the 17-cage must add up to 6 (because $51-45=6$).

Although we haven't solved the cells, we can split the 17 cage into two. The part within the block has a sum of 11, and the two cells outside the block have a total of 6.



Splitting the cage allows us to attack each new cage separately, limiting candidate numbers considerably. The new 6-cage only has two possible candidate combinations (1-5 and 2-4).

Limited Sums

When looking at a given cage, we can work out all the possible combinations of numbers that can be used to arrive at its target sum. Sometimes there will be lots of them, which isn't much help. But sometimes you will find there are just one or two possible combinations. For example, a 2-cell cage with a target of 3 can only contain a 1 and 2. A 3-cell cage with a target of 7 can only contain a 1, 2 and 4. Writing these in as candidate numbers will help you as you use regular Sudoku techniques in the rest of the puzzle.

Required Digits

These are more rare than limited sums, but very useful. There are certain cage-size / target sum combinations that will, whatever combination of digits they contain, *require* one or more digits to be present. For example, a 4-cell cage with a target of 13 must include a 1 somewhere, because all the possible sum combinations include a 1 (1,2,3,7 or 1,2,4,6 or 1,3,4,5). If you find a required digit you can write it into each cell in the cage as a candidate number, thus helping you in other areas of the puzzle.

More Killer Sudoku

The seven puzzles ahead are a small taste of what you can find in *Properly Killer Sudoku*, the book we built around our improved Killer Sudoku grid. As you solve them, notice how easily each cage stands out, how much room you have for candidates, and how the difficulty level of each subsequent puzzle increases. If it feels like Killer Sudoku always should have, the book is ready and waiting for you:

- 300 puzzles, *Easy to Extreme*, all on our redesigned grids
- Every puzzle properly graded, so the difficulty is what it says
- Just two grids per page, each grid 110mm (4.3") square
- Cheat Sheet and solutions included, for a screen-free experience



[Click here to get the book on Amazon \(or scan the QR code\)](#)



Cheat Sheet

2-Cell Cage Combinations

3	12
4	13
5	14 23
6	15 24
7	16 25 34
8	17 26 35
9	18 27 36 45
10	19 28 37 46
11	29 38 47 56
12	39 48 57
13	49 58 67
14	59 68
15	69 78
16	79
17	89

3-Cell Cage Combinations

6	123
7	124
8	125 134
9	126 135 234
10	127 136 145 235
11	128 137 146 236 245
12	129 138 147 156 237 246 345
13	139 148 157 238 247 256 346
14	149 158 167 239 248 257 347 356
15	159 168 249 258 267 348 357 456
16	169 178 259 268 349 358 367 457
17	179 269 278 359 368 458 467
18	189 279 369 378 459 468 567
19	289 379 469 478 568
20	389 479 569 578
21	489 579 678
22	589 679
23	689
24	789

4-Cell Cage Combinations

10	1234
11	1235
12	1236 1245
13	1237 1246 1345
14	1238 1247 1256 1346 2345
15	1239 1248 1257 1347 1356 2346
16	1249 1258 1267 1348 1357 1456 2347 2356
17	1259 1268 1349 1358 1367 1457 2348 2357 2456
18	1269 1278 1359 1368 1458 1467 2349 2358 2367 2457 3456
19	1279 1369 1378 1459 1468 1567 2359 2368 2458 2467 3457
20	1289 1379 1469 1478 1568 2369 2378 2459 2468 2567 3458 3467
21	1389 1479 1569 1578 2379 2469 2478 2568 3459 3468 3567
22	1489 1579 1678 2389 2479 2569 2578 3469 3478 3568 4567
23	1589 1679 2489 2579 2678 3479 3569 3578 4568
24	1689 2589 2679 3489 3579 3678 4569 4578
25	1789 2689 3589 3679 4579 4678
26	2789 3689 4589 4679 5678
27	3789 4689 5679
28	4789 5689
29	5789
30	6789

Cheat Sheet

5-Cell Cage Combinations

15	12345
16	12346
17	12347 12356
18	12348 12357 12456
19	12349 12358 12367 12457 13456
20	12359 12368 12458 12467 13457 23456
21	12369 12378 12459 12468 12567 13458 13467 23457
22	12379 12469 12478 12568 13459 13468 13567 23458 23467
23	12389 12479 12569 12578 13469 13478 13568 14567 23459 23468 23567
24	12489 12579 12678 13479 13569 13578 14568 23469 23478 23568 24567
25	12589 12679 13489 13579 13678 14569 14578 23479 23569 23578 24568 34567
26	12689 13589 13679 14579 14678 23489 23579 23678 24569 24578 34568
27	12789 13689 14589 14679 15678 23589 23679 24579 24678 34569 34578
28	13789 14689 15679 23689 24589 24679 25678 34579 34678
29	14789 15689 23789 24689 25679 34589 34679 35678
30	15789 24789 25689 34689 35679 45678
31	16789 25789 34789 35689 45679
32	26789 35789 45689
33	36789 45789
34	46789
35	56789

6-Cell Cage Combinations

21	123456
22	123457
23	123458 123467
24	123459 123468 123567
25	123469 123478 123568 124567
26	123479 123569 123578 124568 134567
27	123489 123579 123678 124569 124578 134568 234567
28	123589 123679 124579 124678 134569 134578 234568
29	123689 124589 124679 125678 134579 134678 234569 234578
30	123789 124689 125679 134589 134679 135678 234579 234678
31	124789 125689 134689 135679 145678 234589 234679 235678
32	125789 134789 135689 145679 234689 235679 245678
33	126789 135789 145689 234789 235689 245679 345678
34	136789 145789 235789 245689 345679
35	146789 236789 245789 345689
36	156789 246789 345789
37	256789 346789
38	356789
39	456789

Cheat Sheet

7-Cell Cage Combinations

28	1 2 3 4 5 6 7
29	1 2 3 4 5 6 8
30	1 2 3 4 5 6 9 1 2 3 4 5 7 8
31	1 2 3 4 5 7 9 1 2 3 4 6 7 8
32	1 2 3 4 5 8 9 1 2 3 4 6 7 9 1 2 3 5 6 7 8
33	1 2 3 4 6 8 9 1 2 3 5 6 7 9 1 2 4 5 6 7 8
34	1 2 3 4 7 8 9 1 2 3 5 6 8 9 1 2 4 5 6 7 9 1 3 4 5 6 7 8
35	1 2 3 5 7 8 9 1 2 4 5 6 8 9 1 3 4 5 6 7 9 2 3 4 5 6 7 8
36	1 2 3 6 7 8 9 1 2 4 5 7 8 9 1 3 4 5 6 8 9 2 3 4 5 6 7 9
37	1 2 4 6 7 8 9 1 3 4 5 7 8 9 2 3 4 5 6 8 9
38	1 2 5 6 7 8 9 1 3 4 6 7 8 9 2 3 4 5 7 8 9
39	1 3 5 6 7 8 9 2 3 4 6 7 8 9
40	1 4 5 6 7 8 9 2 3 5 6 7 8 9
41	2 4 5 6 7 8 9
42	3 4 5 6 7 8 9

8-Cell Cage Combinations

36	1 2 3 4 5 6 7 8
37	1 2 3 4 5 6 7 9
38	1 2 3 4 5 6 8 9
39	1 2 3 4 5 7 8 9
40	1 2 3 4 6 7 8 9
41	1 2 3 5 6 7 8 9
42	1 2 4 5 6 7 8 9
43	1 3 4 5 6 7 8 9
44	2 3 4 5 6 7 8 9

9-Cell Cage Combination

45	1 2 3 4 5 6 7 8 9
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3-Cell Cage Required Digits

8	1
22	9

4-Cell Cage Required Digits

12	12
13	1
27	9
28	8 9

5-Cell Cage Required Digits

17	123
18	12
19	12
20	12
21	1
31	9
32	89
33	789

6-Cell Cage Required Digits

23	1234
24	123
25	12
26	1
34	9
35	89
36	789
37	6789

7-Cell Cage Required Digits

30	12345
31	1234
32	123
33	126
34	1
36	9
37	89
38	789
39	36789
40	56789

Skill Tracker

PUZZLES COMPLETED

Puzzle	Time Taken	Used Calculator?	Used Cheat Sheet?	Solved Correctly?	Notes
1					
2					
3					
4					
5					
6					
7					

TECHNIQUES USED

SOLVING TECHNIQUE	USED 
Single Innie	
Single Outie	
Multiple Innies	
Multiple Outies	
Innie + Outie	
Cage Splitting	
Combined Row/Column/Block	
Limited Sums	
Required Digits	

Killer Sudoku #1

Easy (Difficulty: 0)

16		19		13			3	
	9			7	8	12		11
10		12				15		
19			6		12	16		5
12		10	13			13		
9				16	7		11	
	9		8			21		
3				23		7	12	
24			9				5	

Start Time

End Time

Total Solve Time

Killer Sudoku #2

Medium (Difficulty: 16)

17		13				9		14
12			13		15		10	
11		16	19					
			9		10	4	20	
6	9	16	9				20	
			9					16
15	18		12	9		21		
				13	10		17	
10		3						

Start Time

End Time

Total Solve Time

Killer Sudoku #3

Medium (Difficulty: 25)

14		5	17	17		13	12	
8	9			33				
		17						
23			11			9	9	11
		16	10		30			
12	14					9		13
		13	4					
				20	7		21	
13					15			

Start Time

End Time

Total Solve Time

Killer Sudoku #4

Hard (Difficulty: 42)

10	8	15	8		24	9		7
						5	15	
12			16	7				13
28				23			20	
					9			
17			18			21	11	
21	8							14
	22			14				
		13			17			

Start Time

End Time

Total Solve Time

Killer Sudoku #5

Hard (Difficulty: 50)

20	9		12	4	21		14	
						14	13	
13		25						
20				9		8	18	
		14		19	9			13
10	12					25		
	25	12					18	
			22	10				16

Start Time

End Time

Total Solve Time

Killer Sudoku #6

Extreme (Difficulty: 70)

13	10		11			12		14
		16		15				
20	14			17	16		19	
	11				25	5		
		10					12	
7	21				12	15		12
			14					
15		26			17		12	14

Start Time

End Time

Total Solve Time

Killer Sudoku #7

Extreme (Difficulty: 90)

25	12			20		27		
		7				10		
7		11		5	14		8	
	12		12			12		18
15					15			
22		11		13		9		
			13			26		11
7	13	10	17	15				
							8	

Start Time

End Time

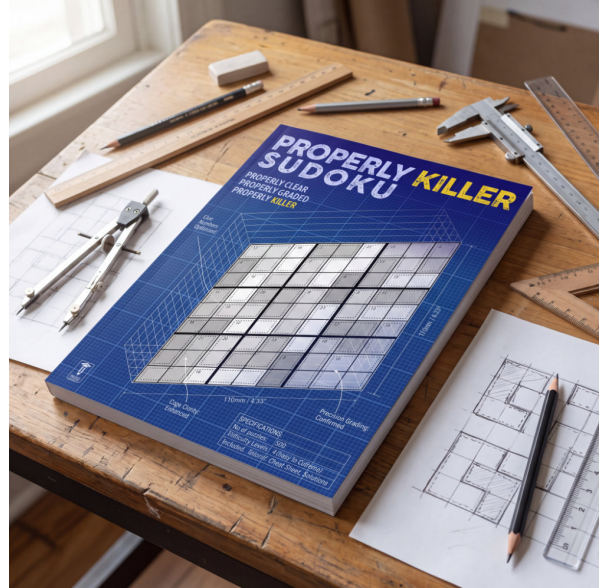
Total Solve Time

Properly Killer Sudoku

That was the **taster**. Here's the rest...

How did you get on? How did those grids feel? Cages you could see at a glance. Room to work out your candidates. *Hard* puzzles that were genuinely harder, and an *Easy* that stayed easy.

It wasn't a lucky sample. That's how every page of *Properly Killer Sudoku* is made. It includes 300 puzzles that grow with you from the easiest *Easy* (rated 0) to the most difficult *Extreme*, rated a whopping 146!



- Properly **clear** grids, shaded for clarity.
- Properly **graded for difficulty** so know what you're walking into before you write a digit.
- Only two puzzles per page. Generous 110mm (4.3") grids, with room for notes on and off the puzzle.
- *Easy, Medium, Hard* and *Extreme*: 300 puzzles to keep the enjoyment going for months.
- Cheat Sheet, solving guide and full solutions built into the book.

If you liked these seven, you're going to love the next **300!**

[Click here to get the book on Amazon \(or scan the QR code\)](#)



Solutions

#1

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

#2

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

#3

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

#4

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

#5

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

#6

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

#7

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