BmMT Puzzle Round 2023

Step by step solutions to all puzzles. We recommend following along with the blank grids to fully understand the solutions, sometimes several steps are combined together for the sake of brevity

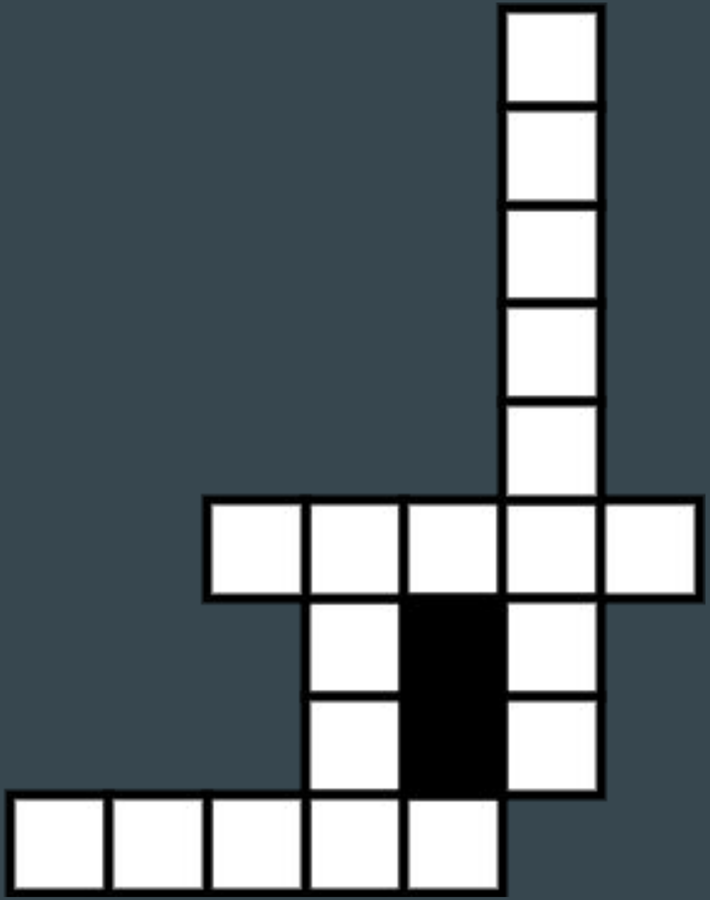
Basic 1

2023

32768

65536

52200625



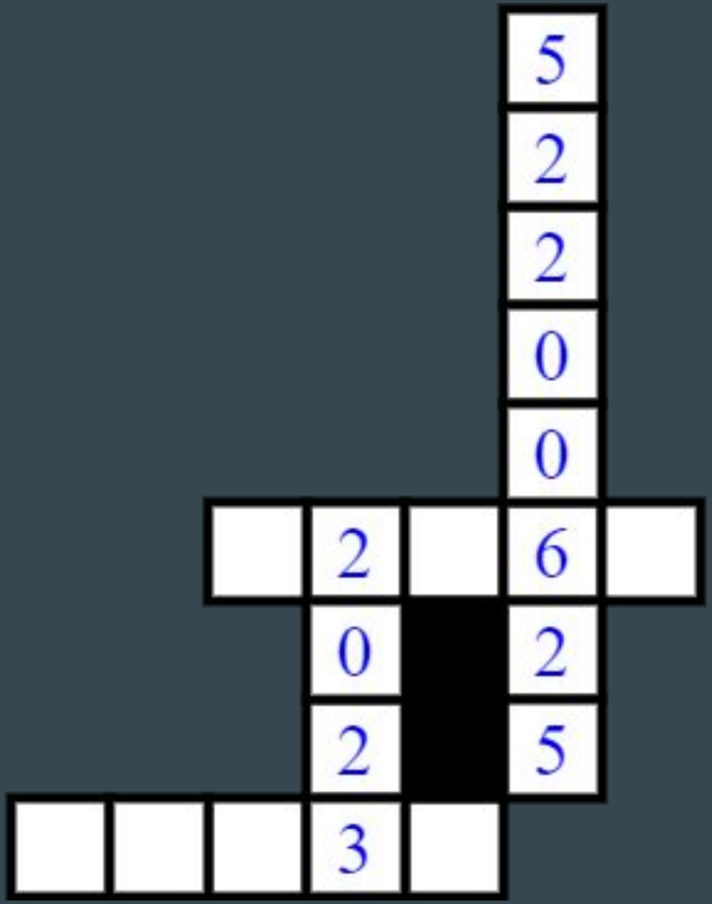
Basic 1

2023

32768

65536

52200625



Basic 1:

We can place 2023 and 52200625 immediately as they are the only 4-digit and 8-digit numbers in the grid.

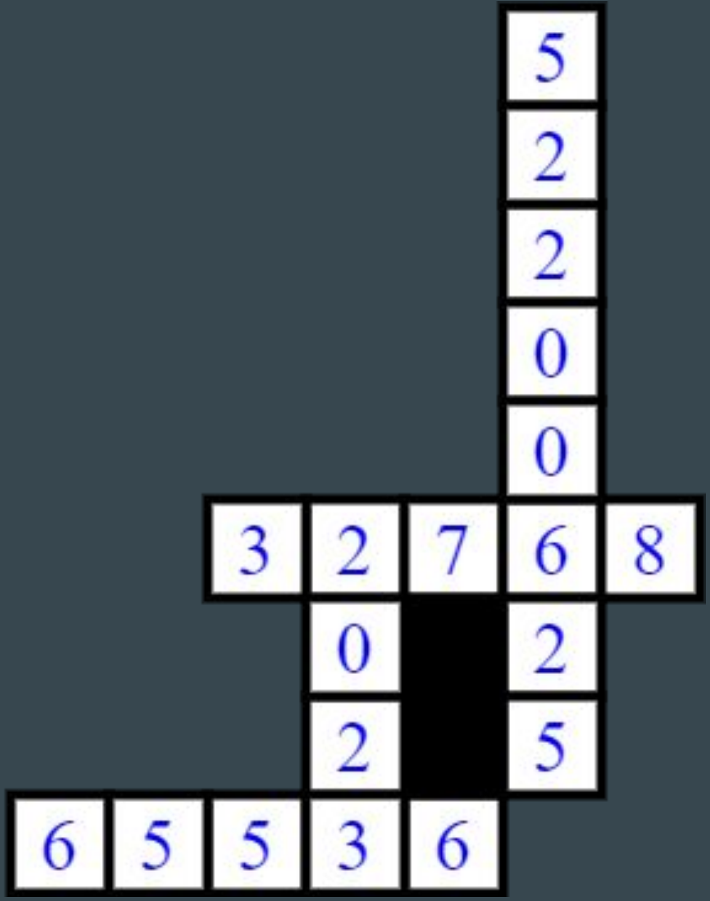
Basic 1

2023

32768

65536

52200625



Basic 1:

Only 32768 has a 2 in the second position, so the topmost across position must be 32768 and the other across position must then be 65536 as the last remaining number.

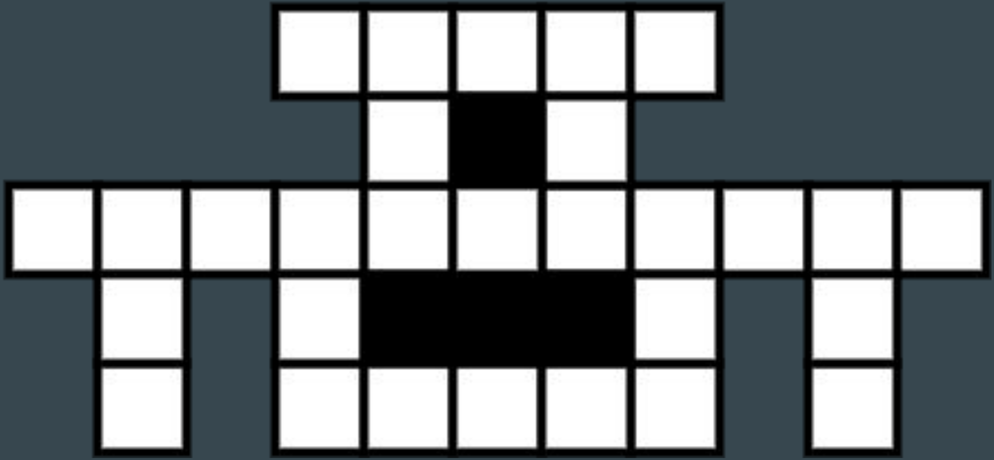
Basic 2

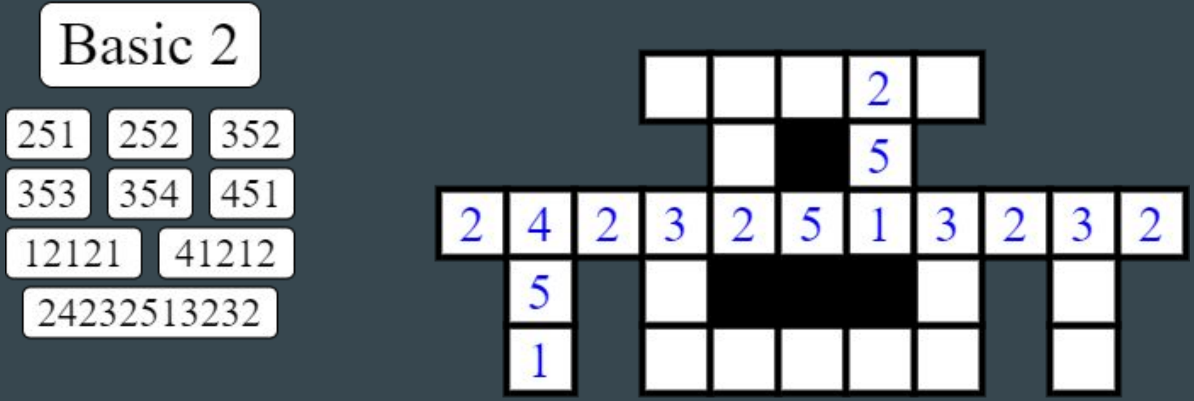
251 252 352

353 354 451

12121 41212

24232513232



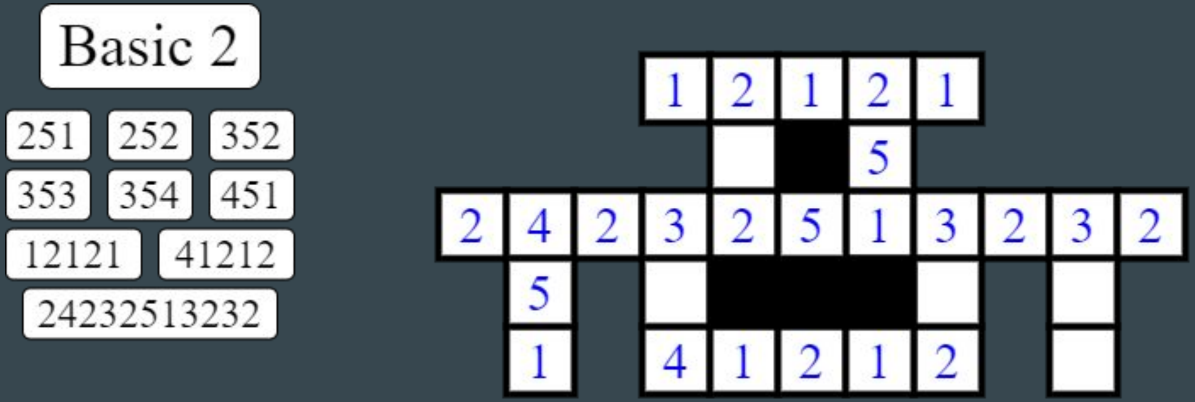


Basic 2:

24232513232 is much longer than the other numbers, making it easy to place immediately.

We can then place 451 since it is the only 3 digit number starting with 4.

This lets us place 251 as well since it is the only remaining 3 digit number ending in 1.



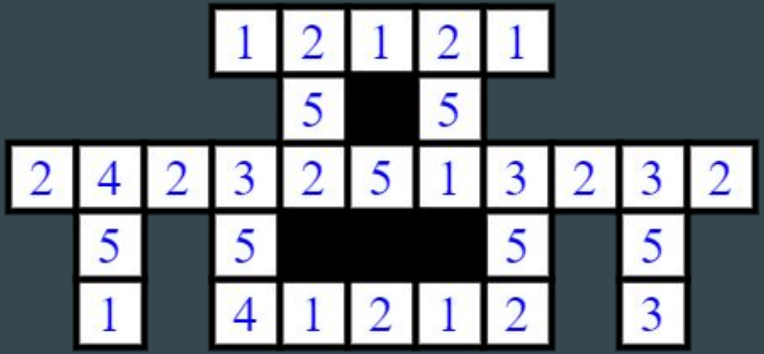
Basic 2:

This lets us place 12121 at the top since this is the only 5-digit number that has a 2 in the 4th position.

By process of elimination 41212 is filled in at the bottom.

Basic 2

251 252 352
353 354 451
12121 41212
24232513232



Basic 2:

All of the three digit numbers have 5 in the middle, so that allows us to place 252, 354 and 351, which means the last 3-digit number on the right must be 353 (since it is the only remaining number).

Compact 1

21 81 266 686

1614 1616

1841 1862

2428 4282

6141 6261

8468

Compact 1

21 81 266 686

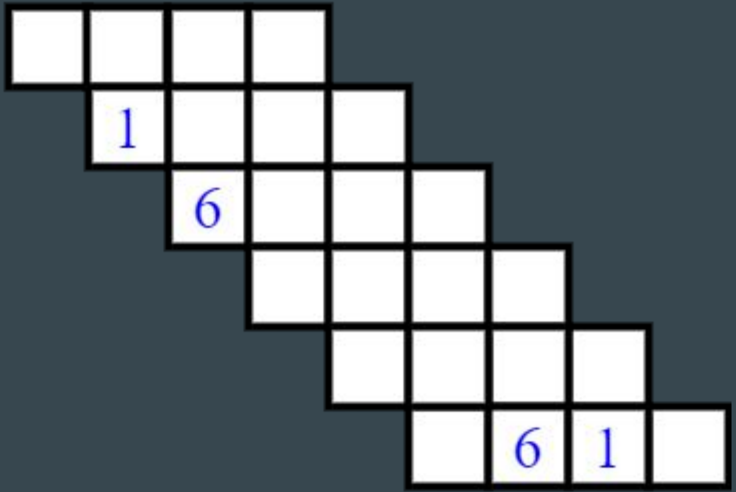
1614 1616

1841 1862

2428 4282

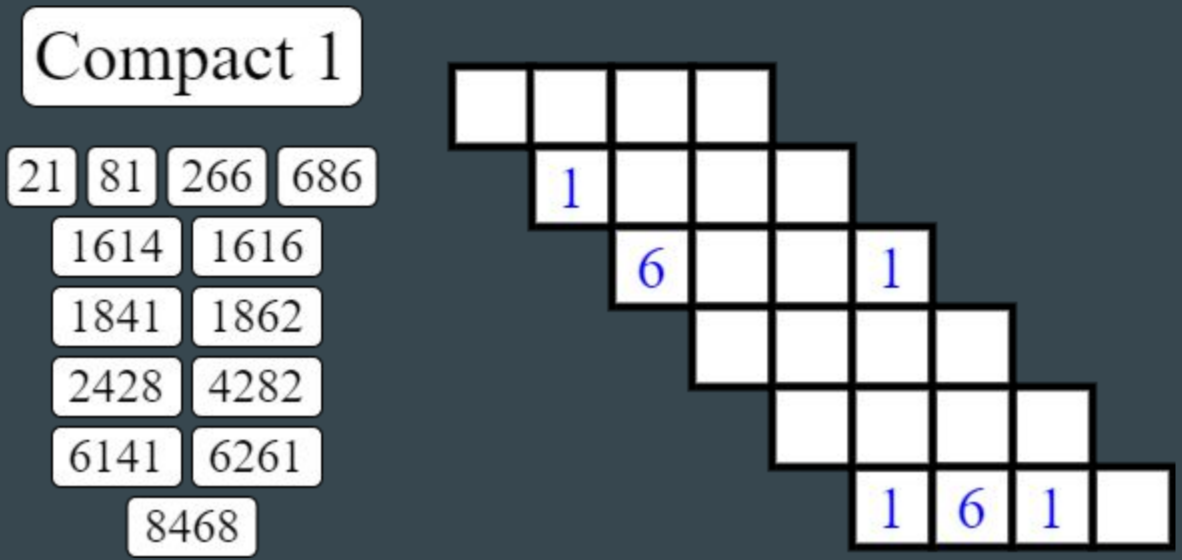
6141 6261

8468



Compact 1:

Notice that the 2-digit numbers and 3-digit numbers “agree” with each other in certain places; the second digits of the 2-digit numbers are both 1, and the last digits of the three digit numbers are both 6. This lets us place 1s and 6s at the end of the 2 and 3 digit numbers in the grid (without knowing where any one full number goes).



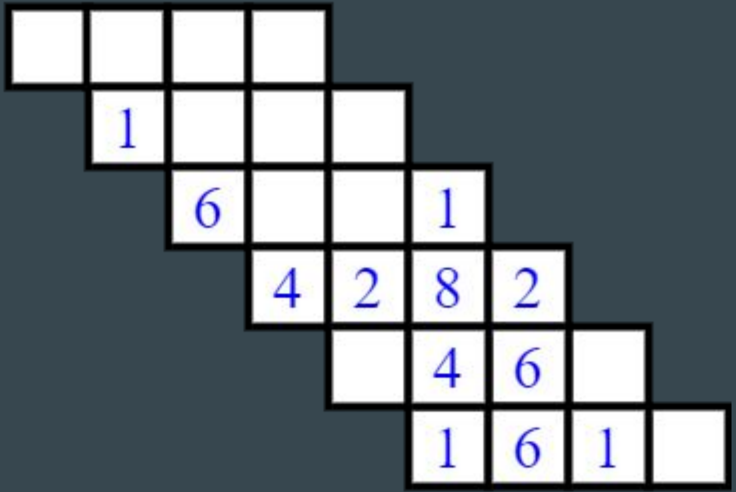
Compact 1:

Now there are only two 4-digit numbers that could fill in the bottom; 1614 and 1616. Both of these numbers start with 1 so we can fill in the 1 at the start of row 6 (counting from the top).

Similarly, out of the two numbers starting with 6 (6141 and 6261), both end with 1, so we can fill in the 1 at the end of row 3.

Compact 1

21 81 266 686
1614 1616
1841 1862
2428 4282
6141 6261
8468



Compact 1:

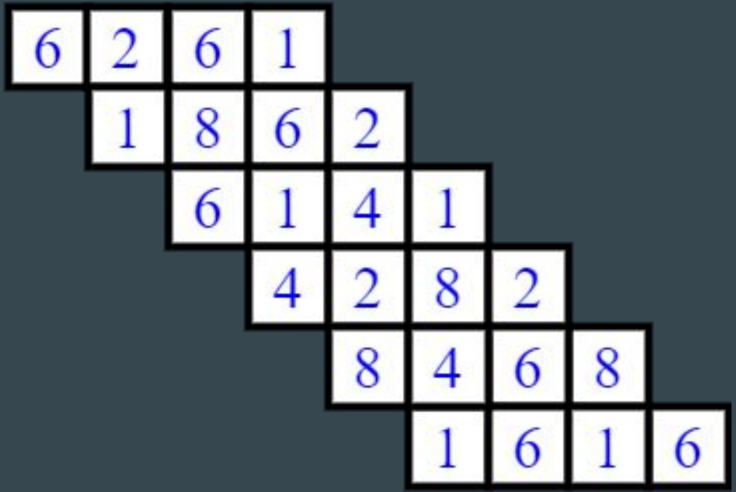
There is only one number starting and ending in 1, which is (1841) allowing us to fill in that column.

From here there is only one number with an 8 in the third position, so we fill in 4282 in row 4.

Then we may fill in 266 in the third column from the right.

Compact 1

21 81 266 686
1614 1616
1841 1862
2428 4282
6141 6261
8468



Compact 1:

There are many possible orders for the last steps, we give one.

Only 8468 may go in row 5.

Only 2428 may go in column 5 (from left).

Now 6141 is given in row 3.

21 and 686 are forced in columns 2 and 3.

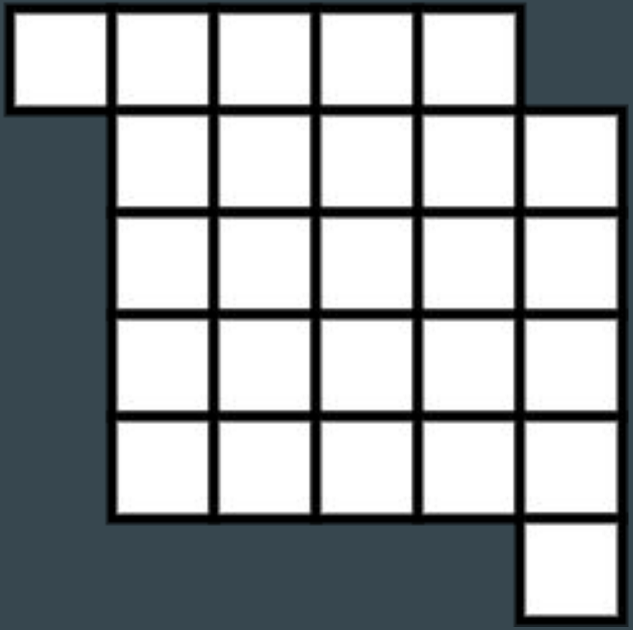
1614 is forced in column 4.

1616 is now the only number possible in row 6.

6261 in row 1 finishes the puzzle.

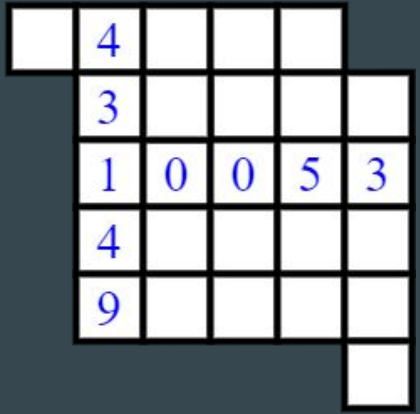
Compact 2

10053	20469
23083	34262
40879	43149
48460	65608
97608	99836



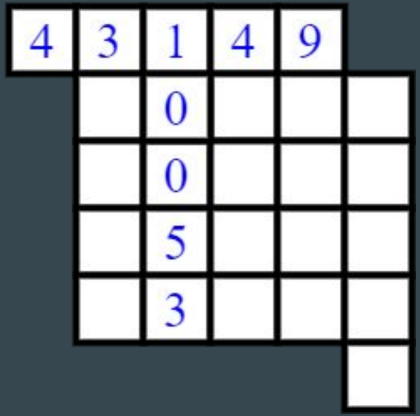
Compact 2

10053	20469
23083	34262
40879	43149
48460	65608
97608	99836



Compact 2

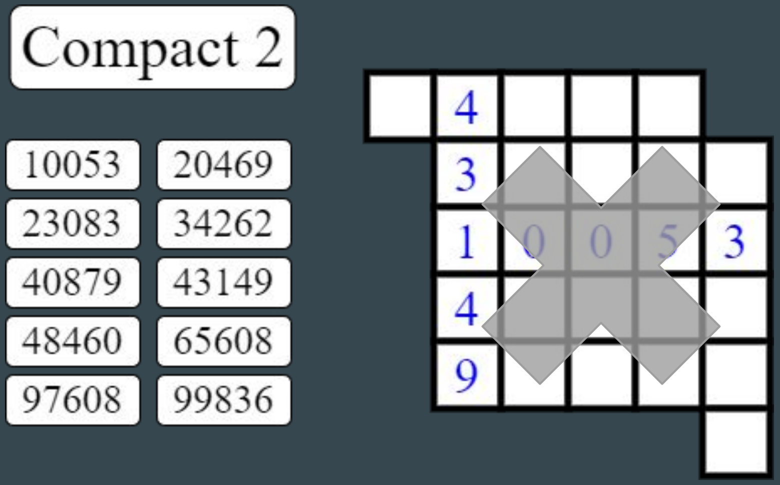
10053	20469
23083	34262
40879	43149
48460	65608
97608	99836

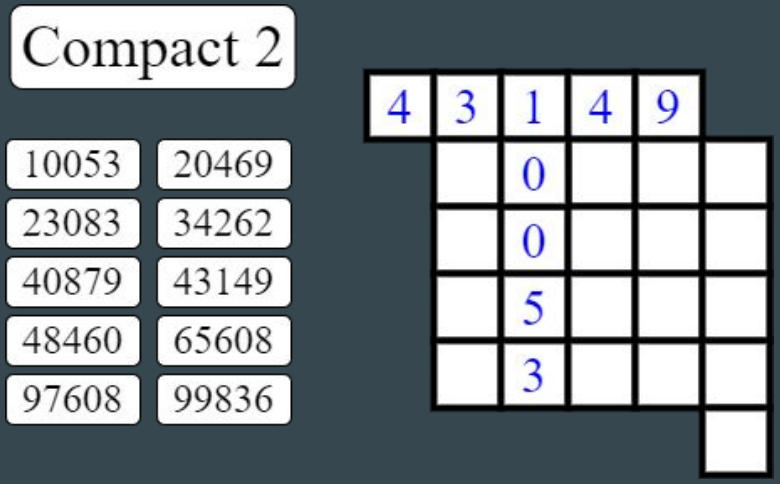


Compact 2:

Notice that there are only two 1s in all of the numbers given: they appear in 10053 and 43149. Since 1 appears in the middle of 43149, it will have to intersect with another number in the grid (due to the shape of the puzzle). Therefore, this number has to be 10053 (since no other number has 1 in it).

This gives two possible orientations for this pair of numbers, shown on the left.



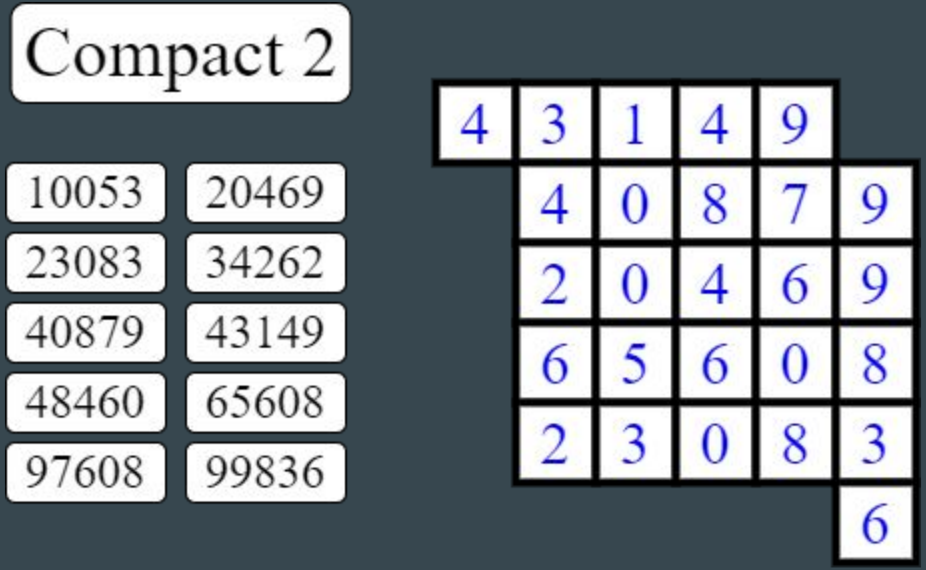


Compact 2:

However, the top placement breaks the puzzle. We realize that we only have one number with 0 in the third position, but the top placement would require two such numbers (in columns 3 and 4).

Therefore, the bottom orientation must be the correct placement.

Compact 2:



From here, most of the work is done. The rest consists of "unique placement" logic (when only one number can go in some position because of previously placed digits).

34262 is the only number that fits column 2.

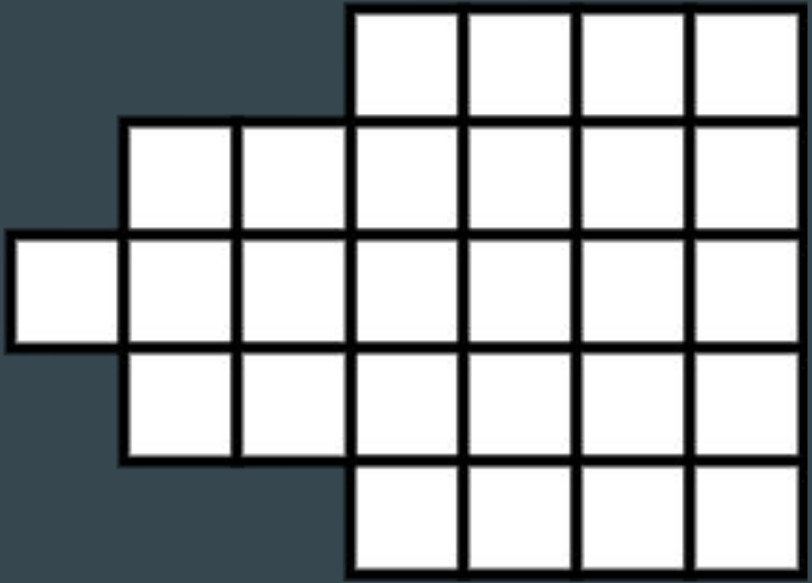
This forces 40879 in row 2 and 20469 in row 3, 65608 is the only number starting with 6 for row 4, similarly for 23083 and 23 in row 5, and 99836 in column 6 finishes the puzzle.

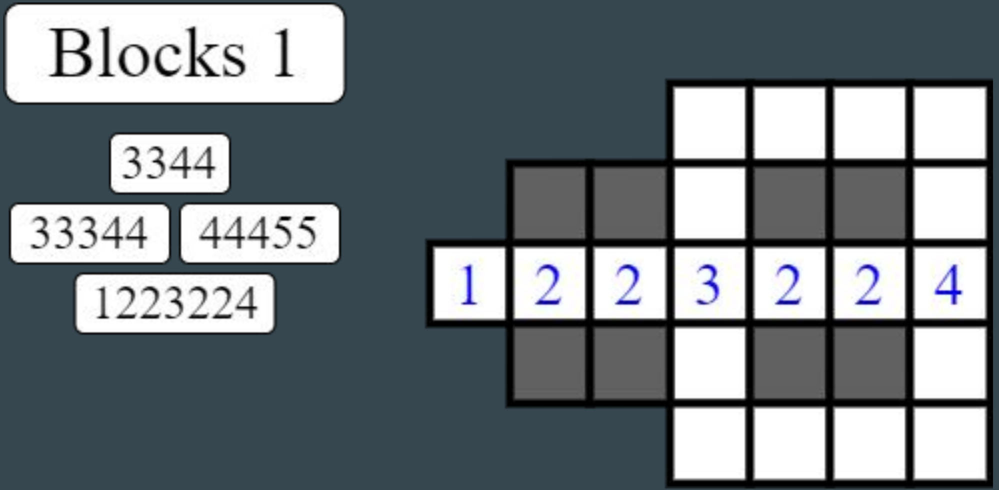
Blocks 1

3344

33344 44455

1223224



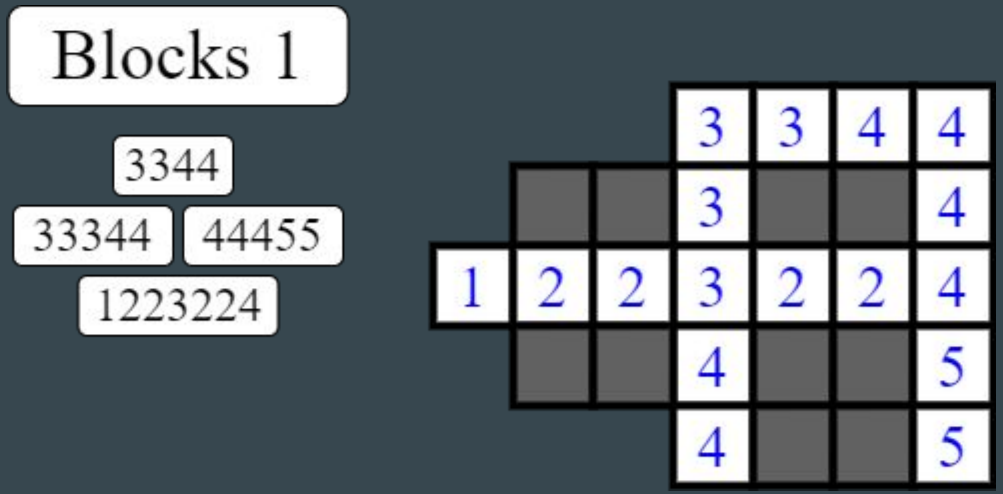


Blocks 1:

1223224 can only be placed horizontally in the middle, as this is where the only chain of 7 squares in a row is.

Then, no other number has a 2 in it, so there can't be any number intersecting 1223224 through the 2s.

This means all squares bordering the 2s must be blocks.



Blocks 1:

There are only two possibilities remaining for the positions of the two 5-digit numbers (33344 and 44455).

We can place these based on their middle digits.

From there, there is only one possible place for 3344 to go, so we fill it in along the top.

Finally we shade in the two last blocks along the bottom since there are no more numbers to fill those squares.

Blocks 2

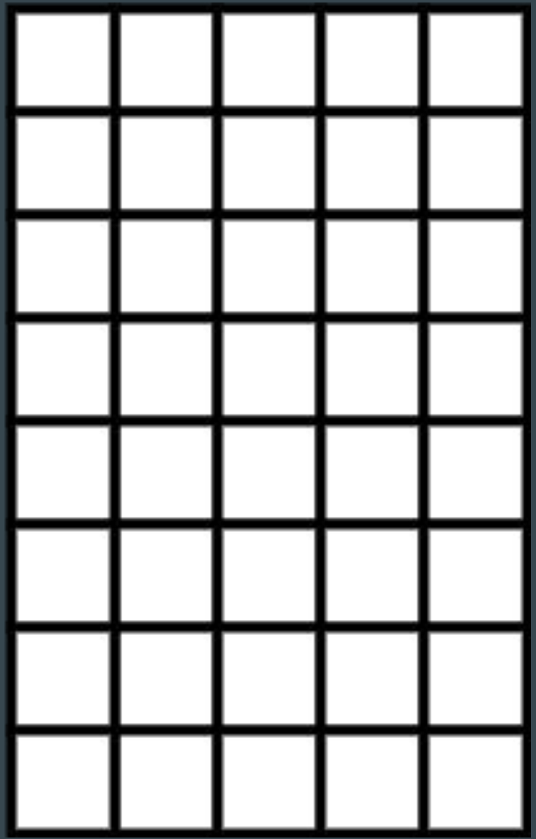
11111 11111

11111 21112

111112

2111111

2111111



Blocks 2

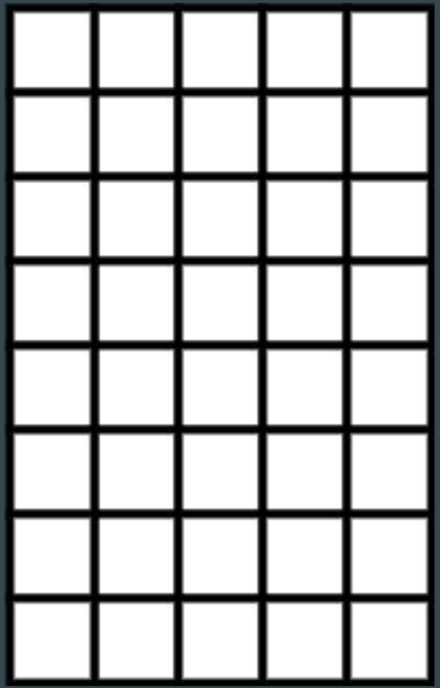
11111 11111

11111 21112

111112

2111111

2111111

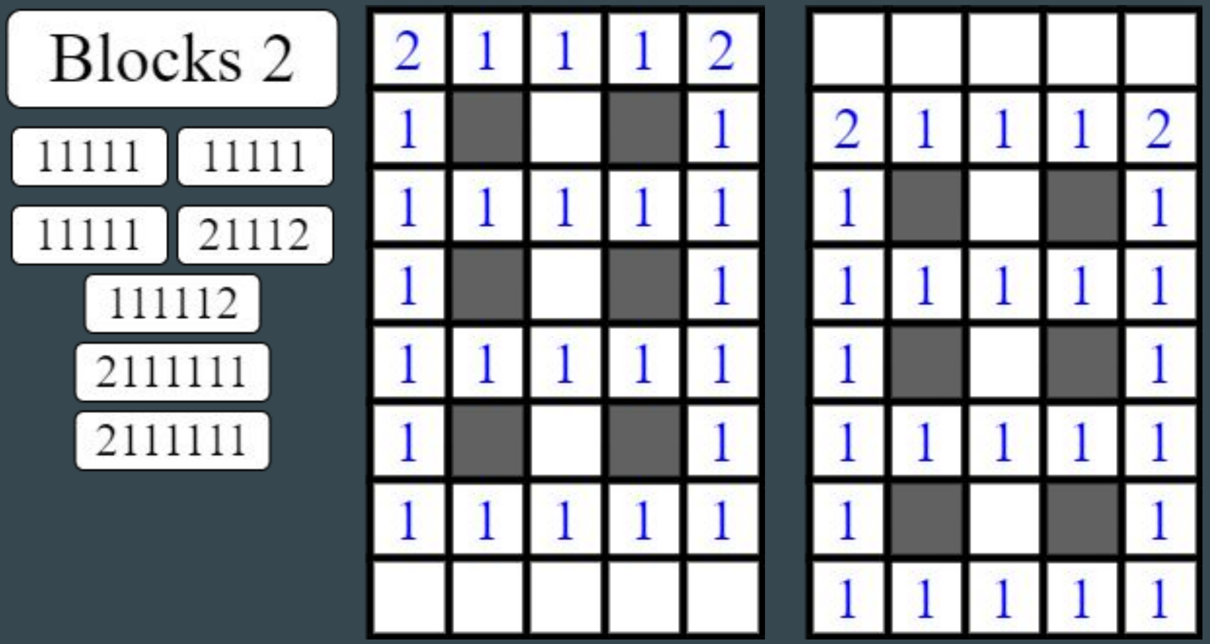


Blocks 2:

This puzzle is about trying to find a way to make space for all of the numbers in the grid.

The first realization is that none of the numbers can be placed in adjacent rows/ columns; there just aren't enough numbers for this to be possible. Placing adjacent numbers forces a lot more adjacencies, as we would need to make sure all numbers formed by the adjacencies are valid. This breaks everything very quickly in most cases.

Therefore, we need three numbers to go vertically and four to go horizontally; the three vertical numbers must be the ones with more than 5 digits.



Blocks 2:

Notice that since 2111111 is of length 7, it must intersect with every horizontal number (if there is a horizontal number in the 8th row, it would add another digit to 2111111 breaking the puzzle).

Therefore we have the horizontal numbers 21111, 11111, 11111, 11111 from top to bottom.

So our grid could look like one of the two grids on the right.

Blocks 2

11111 11111

11111 21112

111112

2111111

2111111

2	1	1	1	2
1				1
1	1	1	1	1
1		1		1
1	1	1	1	1
1		1		1
1	1	1	1	1
		2		

Blocks 2:

However, 111112 cannot have its 2 within the 5x7 block of our previously filled numbers. Therefore we must place the 5x7 block as high as possible so we can fit 111112 vertically in the middle with the 2 sticking out of the bottom.

This rules out the second placement (on the right side) from the previous slide, leaving us with this solution.

Blocks 3

1130411 2230422

2233311 2244411

11444055522

33666044411

44111011166

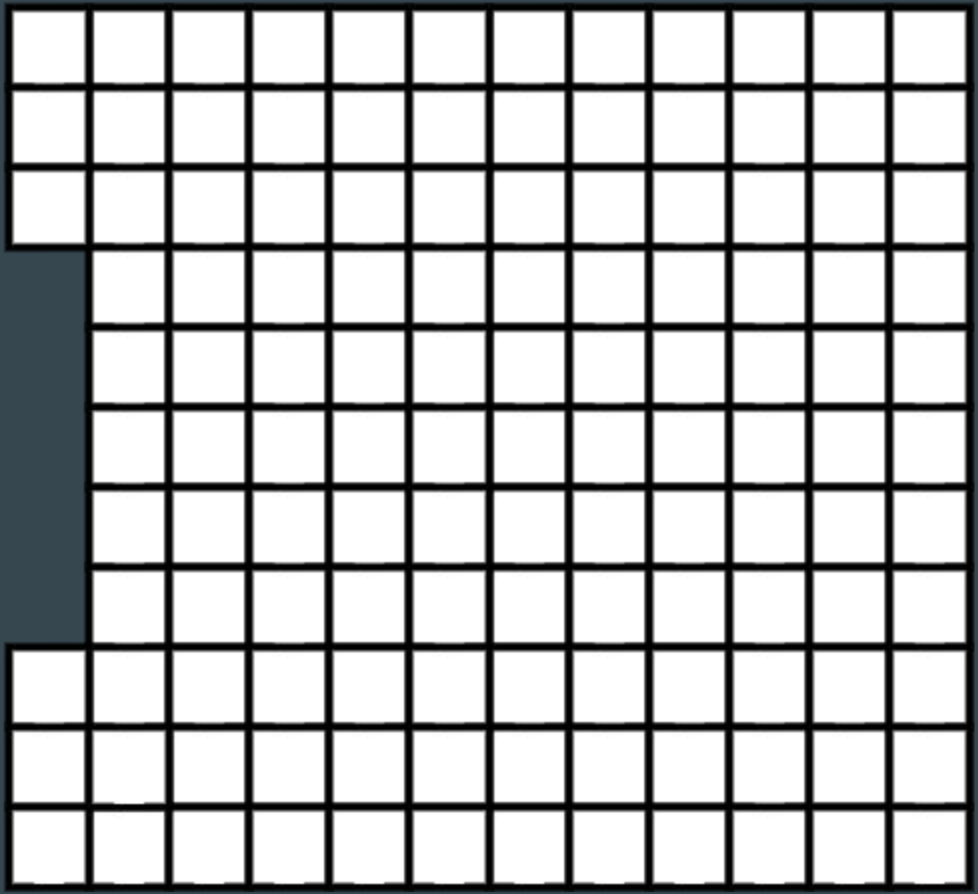
55222022244

711555044433

722444066611

744222011166

755222011144



Blocks 3

1130411 2230422

2233311 2244411

11444055522

33666044411

44111011166

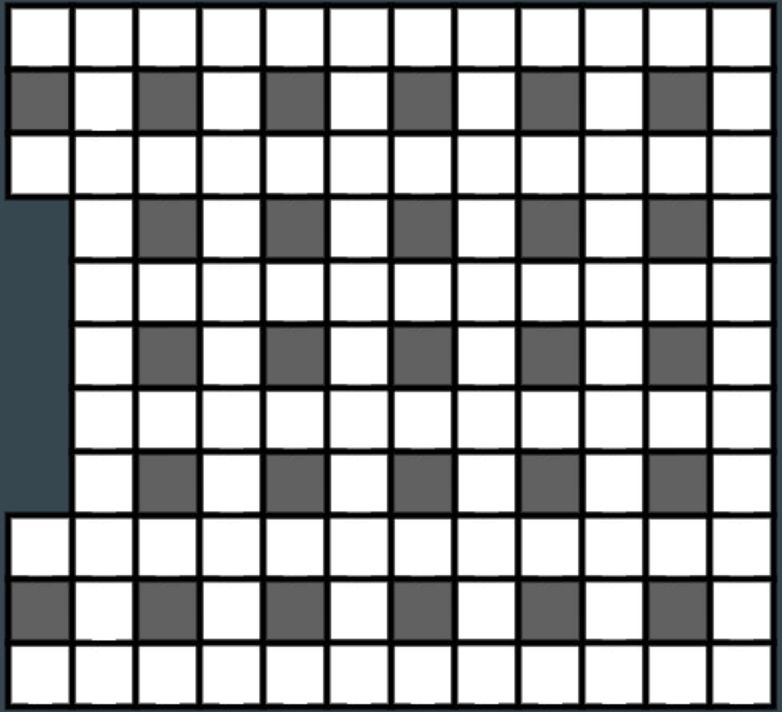
55222022244

711555044433

722444066611

744222011166

755222011144



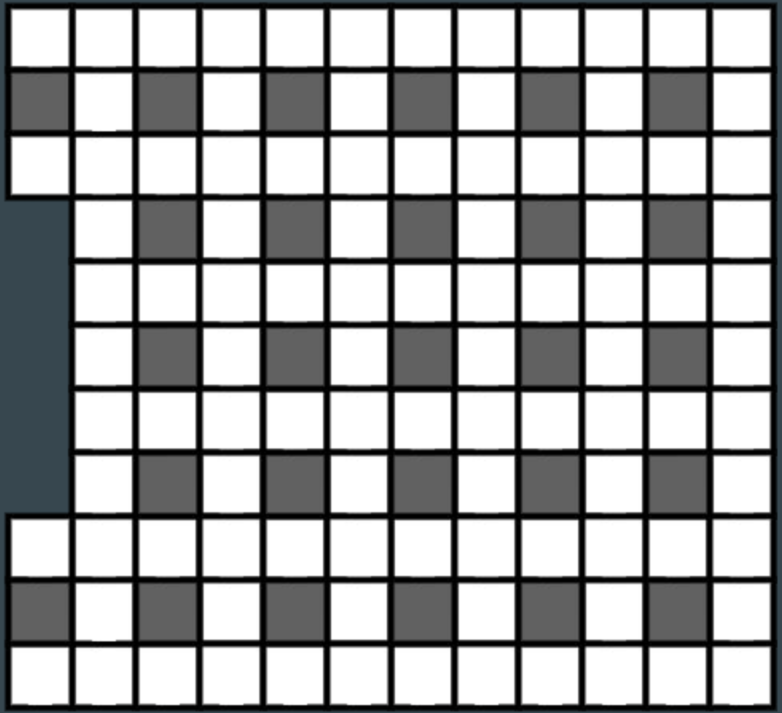
Blocks 3:

This puzzle requires similar geometric reasoning to Blocks 2, but more complicated. First, we again realize that no two numbers can go in adjacent rows or columns (it forces more adjacent numbers, which breaks quickly)

From this information we can deduce there must be a number in every odd-indexed row, and there must be a number in every even-indexed column (since they can't fit in column 1). This lets us fill in some blocks.

Blocks 3

1130411 2230422
2233311 2244411
11444055522
33666044411
44111011166
55222022244
711555044433
722444066611
744222011166
755222011144



Blocks 3:

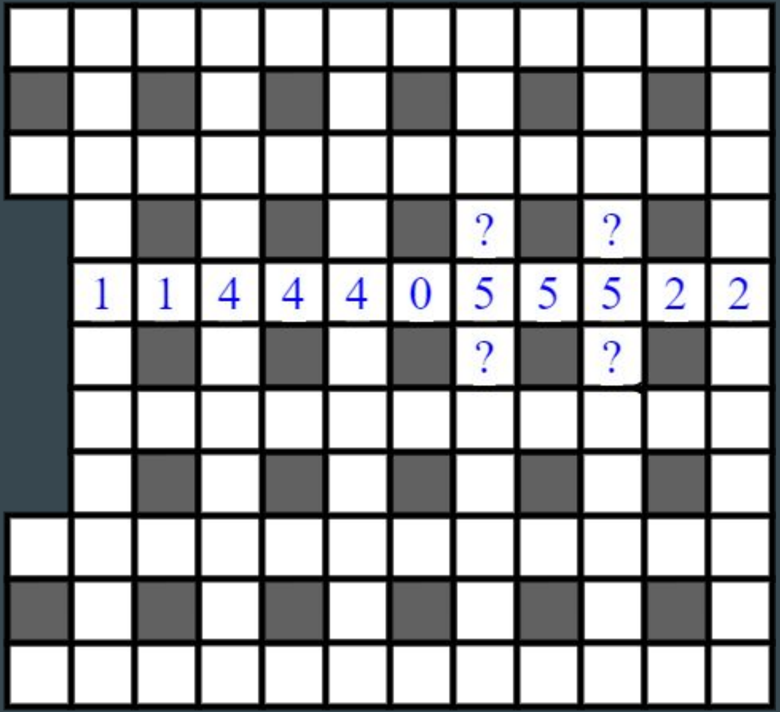
We continue by noting the 4 length-12 numbers (those starting with 7) can only be placed horizontally.

This forces the 11-digit number 11444055522 to be placed vertically in a column, which will be explained in the next slide.

We will use this information to place the 4 12-digit numbers.

Blocks 3

1130411
2230422
2233311
2244411
11444055522
33666044411
44111011166
55222022244
711555044433
722444066611
744222011166
755222011144



Blocks 3:

If we place 11444055522 horizontally in one of the middle rows, it will intersect every vertical number. But then we need at least two vertical numbers with 5s in them, and there is only one remaining number which could be vertical with a 5 in it. Therefore, 11444055522 can't be horizontal and must be vertically placed.

Blocks 3

1130411 2230422

2233311 2244411

11444055522

33666044411

44111011166

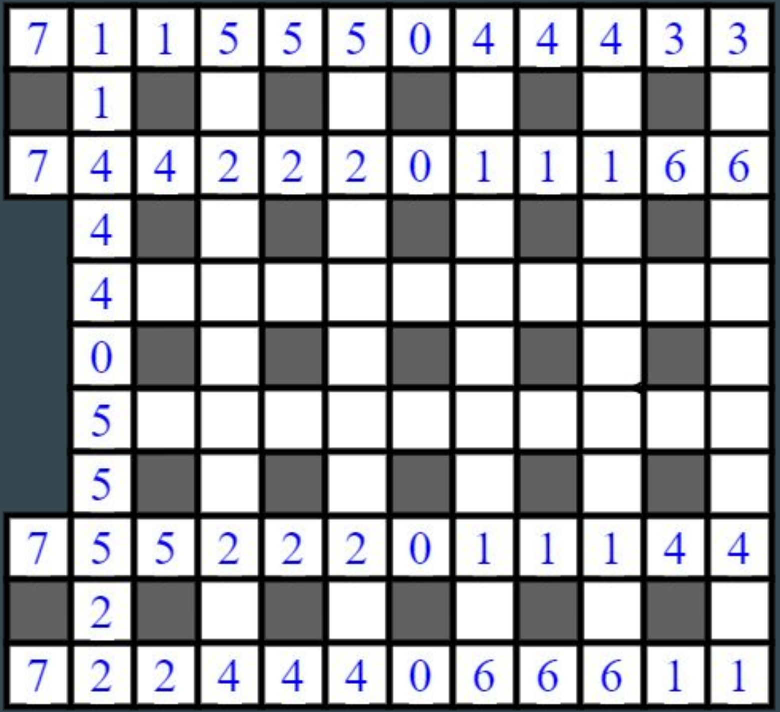
55222022244

711555044433

722444066611

744222011166

755222011144



Blocks 3:

This is very powerful information. If we look at the digits of the four 12-digit numbers, we need an even index i where the i^{th} digits of the four numbers are 1, 4, 5, and 2 in that order vertically (because of 11444055522 intersecting with all of them). The only possible i is the 2nd position, which allows us to place all four 12-digit numbers in the grid (as well as 11444055522 vertically).

Blocks 3

1130411 2230422
2233311 2244411
11444055522
33666044411
44111011166
55222022244
711555044433
722444066611
744222011166
755222011144

7	1	1	5	5	5	0	4	4	4	3	3
	1		5						4		3
7	4	4	2	2	2	0	1	1	1	6	6
	4		2						1		6
	4		2						1		6
	0		0						0		0
	5		2						1		4
	5		2						1		4
7	5	5	2	2	2	0	1	1	1	4	4
	2		4						6		1
7	2	2	4	4	4	0	6	6	6	1	1

Blocks 3:

This forces 33666044411 in the rightmost column.

We also know the last two 11-digit numbers go vertically; it would be impossible to place any 7-digit numbers vertically if one of the 11-digit numbers was placed horizontally.

They must further go on the outer columns; putting an 11-digit number in an inner column would similarly break any horizontally placed 7-digit numbers.

Blocks 3

1130411
2230422
2233311
2244411
11444055522
33666044411
44111011166
55222022244
711555044433
722444066611
744222011166
755222011144

7	1	1	5	5	5	0	4	4	4	3	3
	1		5						4		3
7	4	4	2	2	2	0	1	1	1	6	6
	4		2		2		1		1		6
	4		2	2	3	3	3	1	1		6
	0		0		0		0		0		0
	5		2	2	4	4	4	1	1		4
	5		2		2		1		1		4
7	5	5	2	2	2	0	1	1	1	4	4
	2		4						6		1
7	2	2	4	4	4	0	6	6	6	1	1

Blocks 3:

From here, we can place 2230422 and 1130411 vertically, as they only have one position they still fit in.

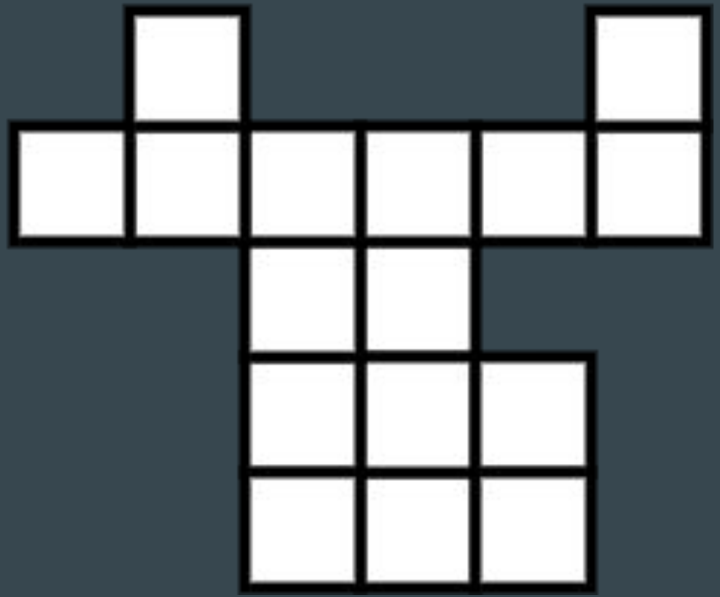
Finally, we use the positions of 3 and 4 to place the last two 7-digit numbers, and place the remaining blocks to complete the puzzle.

Minesweeper 1

10 21 90

229 912

119921

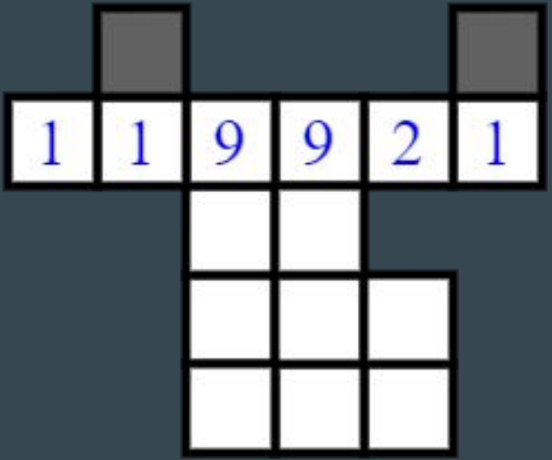


Minesweeper 1

10 21 90

229 912

119921



Minesweeper 1:

We can place 119921 horizontally, as there is one only one place a 6-digit number can fit.

The top left box (row 1, column 2) must be a mine, since the 1 in row 2 column 1 (r2c1) only has that square left as a place for a mine.

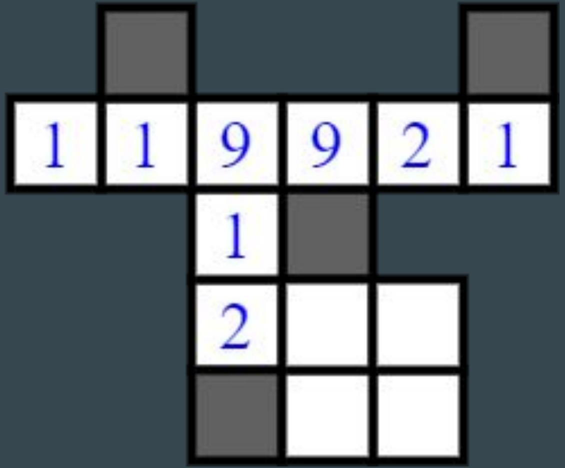
Similarly, the 1 in r2c6 forces a mine in r1c6.

Minesweeper 1

10 21 90

229 912

119921



Minesweeper 1:

The 2 in r2c5 forces a second mine in r3c4, and the 1 in r2c2 means there is no mine in r3c3 (i.e. forces a number in r3c3).

This means we need a number starting with 9 going down from r2c3, which can only be 912 (since the second digit r3c3 borders the mine in r3c4 and so can't be 0).

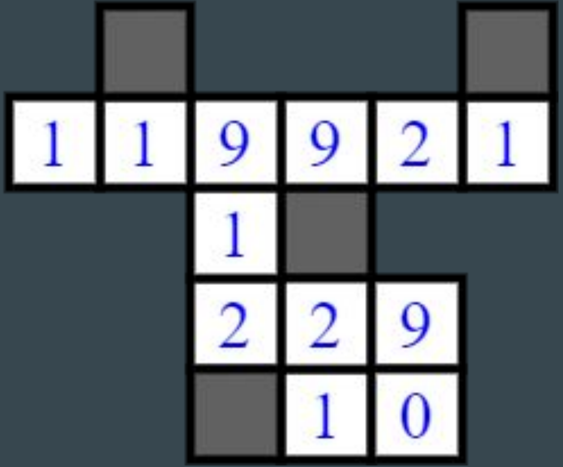
912 must have a mine beneath it in r5c3 to end the number.

Minesweeper 1

10 21 90

229 912

119921



Minesweeper 1:

The 2 in r4c3 forces numbers in r4c4 and r5c4, which means the number going across row 4 must be 229 (r4c4 borders 2 mines already and so cannot be 1 to form 21).

We place 21 going down from r4c4 and 90 going down from r4c5 to finish the puzzle.

Minesweeper 2

09 14 42

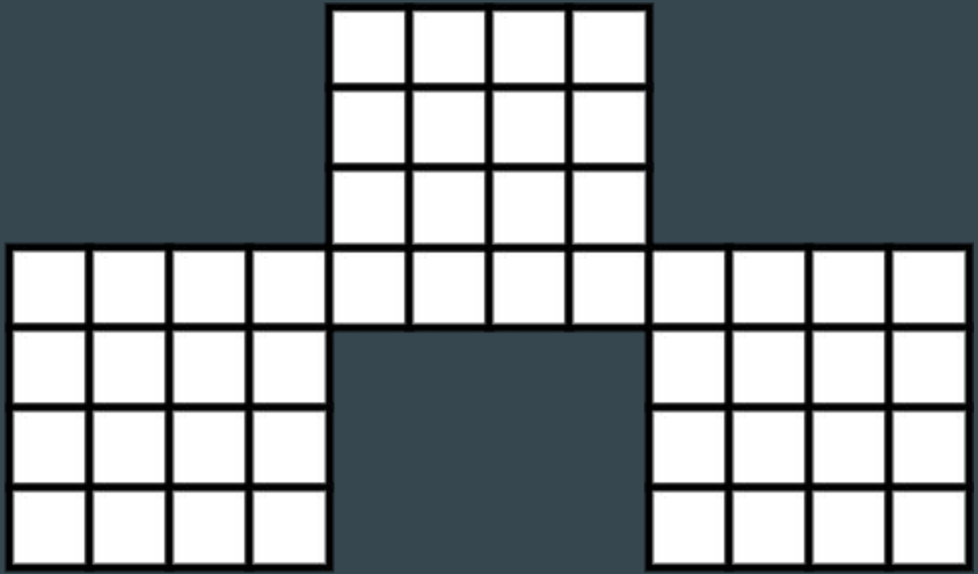
66 92 99

190 296

1992 2999

9232 9999

22222222119



Minesweeper 2

09 14 42

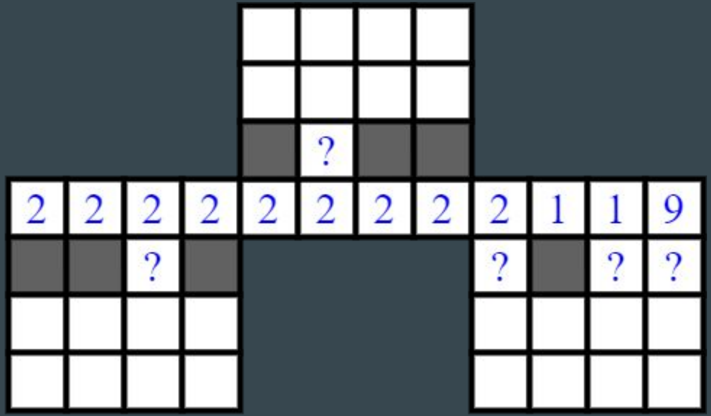
66 92 99

190 296

1992 2999

9232 9999

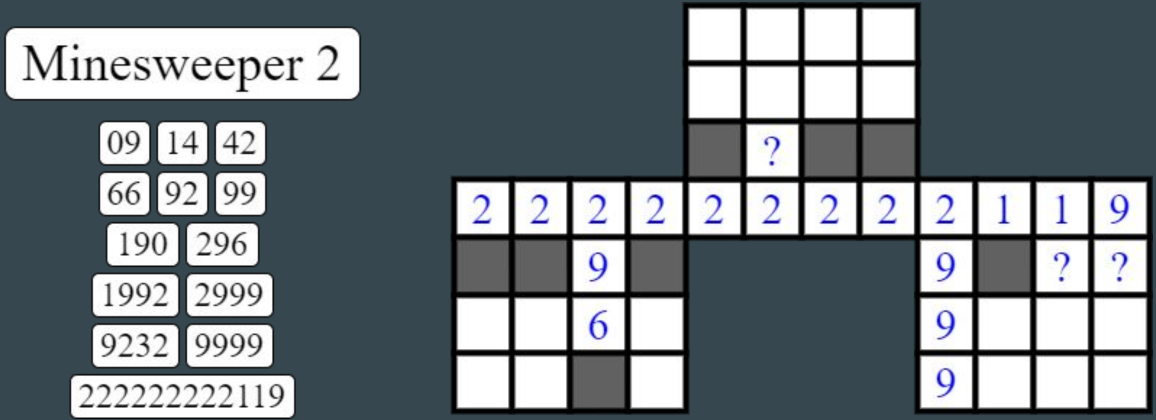
222222222119



Minesweeper 2:

We place the 12-digit number in the only place it can go. This allows several mines to be placed.

r4c1 forces two mines in r5c1 and r5c2, then r4c2 forces a non-mine in r5c3. r4c4 now forces a mine in r5c4 and r3c5. r4c5 forces a non-mine in r3c6. We can continue similar logic until the point shown in the picture.



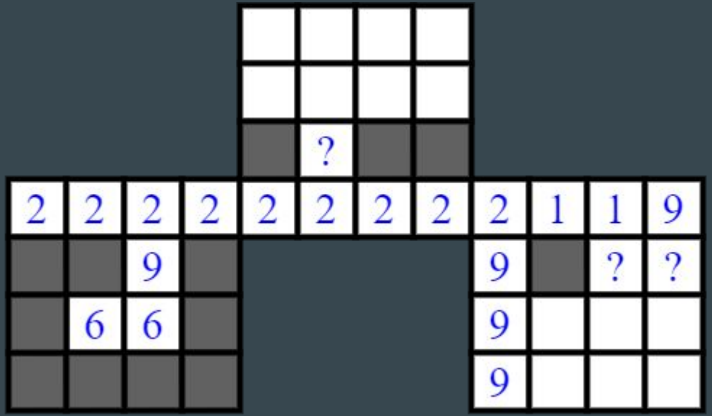
Minesweeper 2:

Now there are two numbers starting with 2 that can go down from r4c9, 296 and 2999. However, 296 doesn’t work as there are only 4 adjacent cells capable of being mines. Therefore we place 2999 going down from r4c9.

This lets us place 296 going down from r4c3, and allows us to place a mine underneath it.

Minesweeper 2

09 14 42
66 92 99
190 296
1992 2999
9232 9999
22222222119



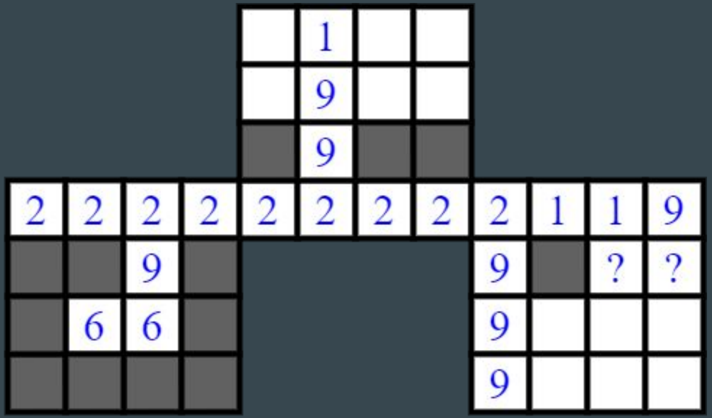
Minesweeper 2:

We need one more non-mine adjacent to the 6, and because all numbered squares are connected side-to-side (*orthogonally*), the nonmine can't be diagonally adjacent (since it couldn't connect)

Then the only possible number to connect is 66, which means it would occupy r6c2 and r6c3, which allows us to fill out the bottom-left squares completely.

Minesweeper 2

09 14 42
66 92 99
190 296
1992 2999
9232 9999
222222222119

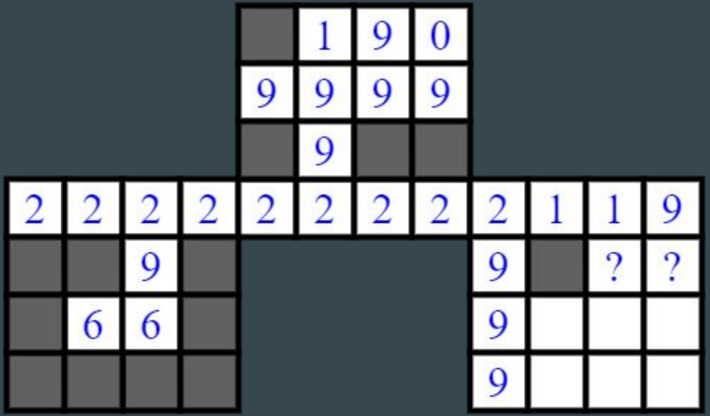


Minesweeper 2:

Now for the top 4x4 box: we know that we need a four-digit number connecting to r4c6, since a 2 digit number will block off the rest of the top squares. This is an issue as we can't fit the remaining numbers in the bottom right box. Therefore our options are 1992 and 9232. However, the 2 that would go in r2c6 would be adjacent to all of the mines for the 3 in r3c6, which is impossible because the 2 would be adjacent to at least 3 mines. Therefore the number connecting to r4c6 would have to be 1992.

Minesweeper 2

09 14 42
66 92 99
190 296
1992 2999
9232 9999
22222222222119

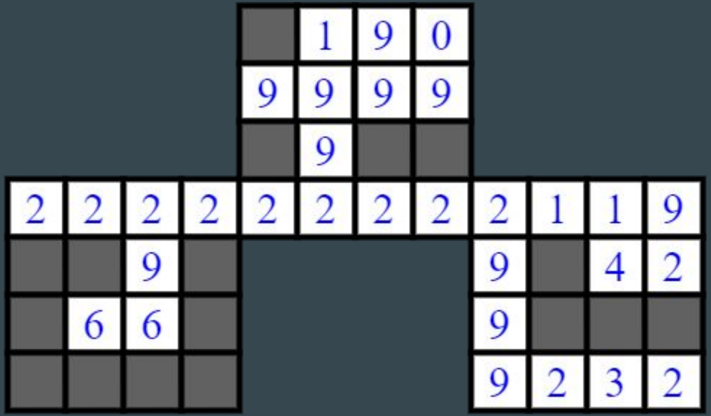


Minesweeper 2:

There is no number with 1 in the second position, so the one mine bordering r1c6 must be in r1c5.

Now the only remaining number with 9 in the second position is 9999, so that goes in row 2.

Then, the number in row 1 can't be 14 because the 4 could only border 1 mine, so it must be 190 to finish the top 4x4.



Minesweeper 2:

Only some cleanup left to do to finish the puzzle.

Now, only 14 can come down from r4c11, which forces mines in row 6 columns 10 through 12.

We get 92 coming down from r4c12, and we get 9232 as the last number across row 7 to finish the puzzle.

Minesweeper 3

01 02 02

10 14 14

29 92 536

924 4959

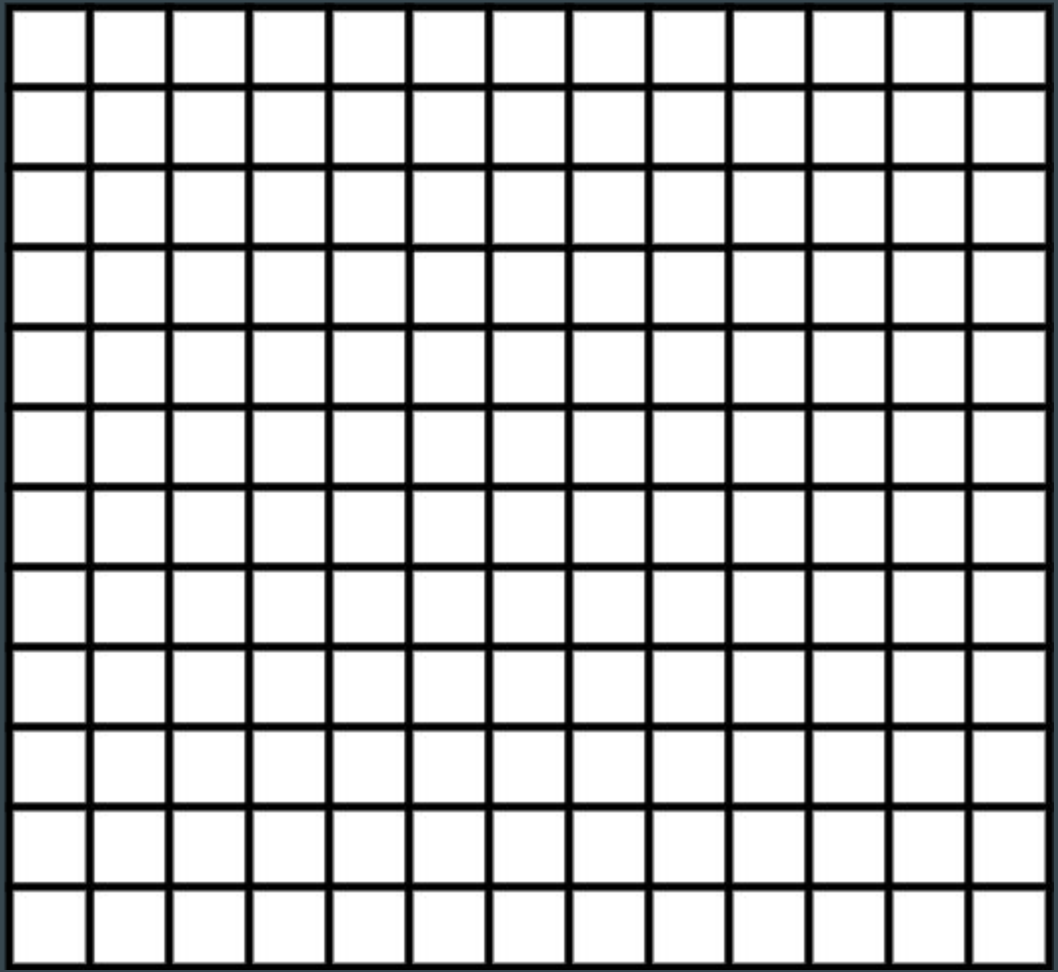
7544 74947

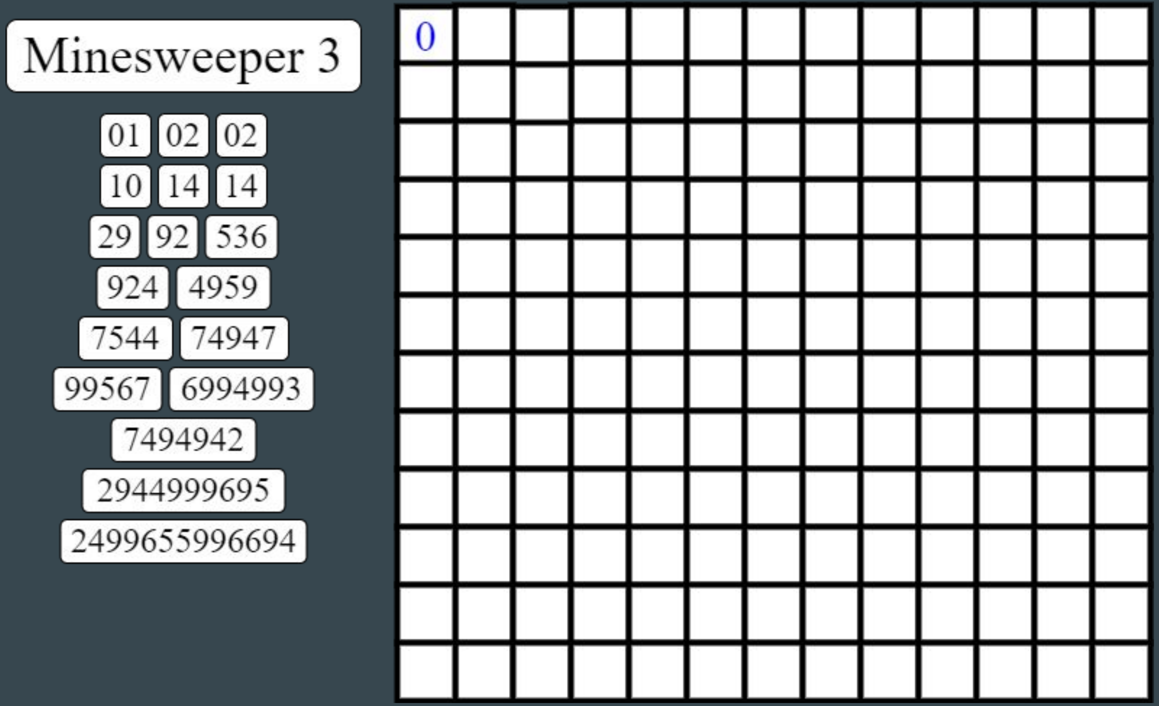
99567 6994993

7494942

2944999695

2499655996694





Minesweeper 3:

The first key realization to make all 0s must be placed in corners, because otherwise they would force a block next to them (since they are either the start or end of a number).

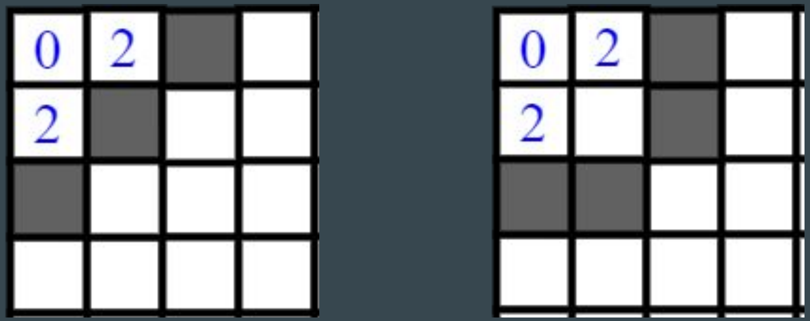
Now, since there are three numbers starting with 0, the top-left corner must contain a 0, because otherwise we can't fit all three of these numbers in the other three corners (try it out!)

We can use this to do some "local" logic around the top-left corner.

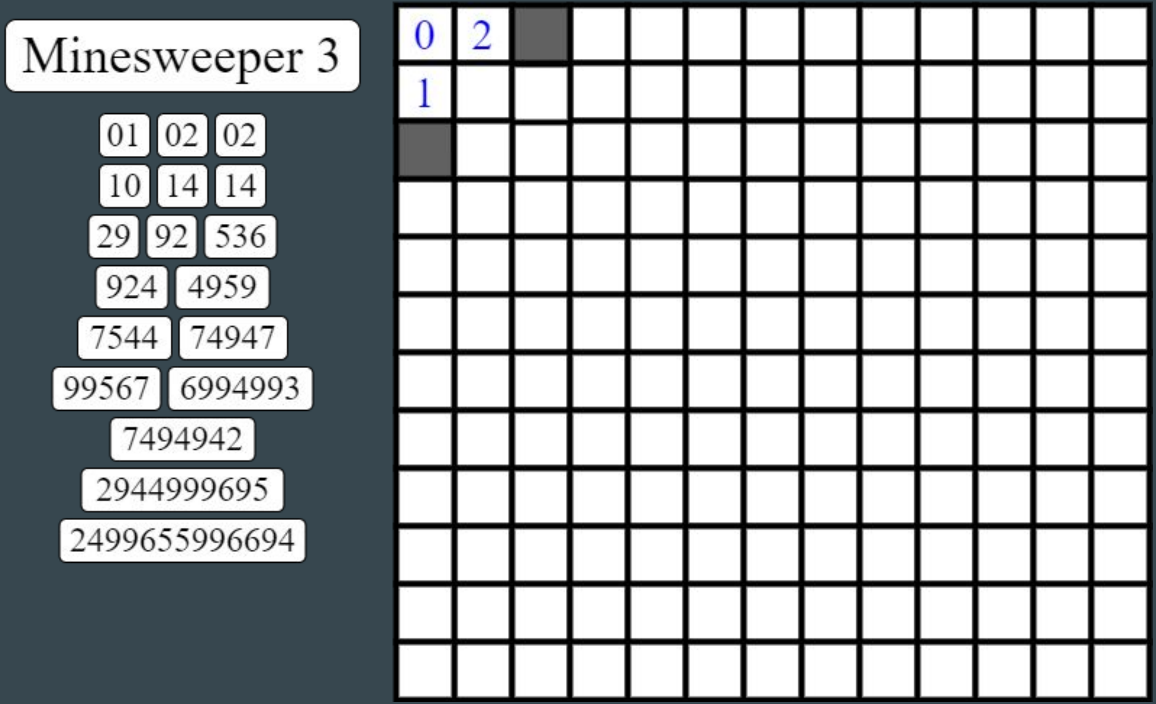
Minesweeper 3:

We know that there are no mines around the 0, so we are forced to place two of our 2 digit numbers surrounding it. We will determine exactly what these are and how they are placed.

First, notice that we can't place both 02's, as they force themselves to be isolated from the other numbers (which is illegal, since all numbers are required to be connected). [see image on the left]



These are the only two options for mines if we have both 02s, and they both break

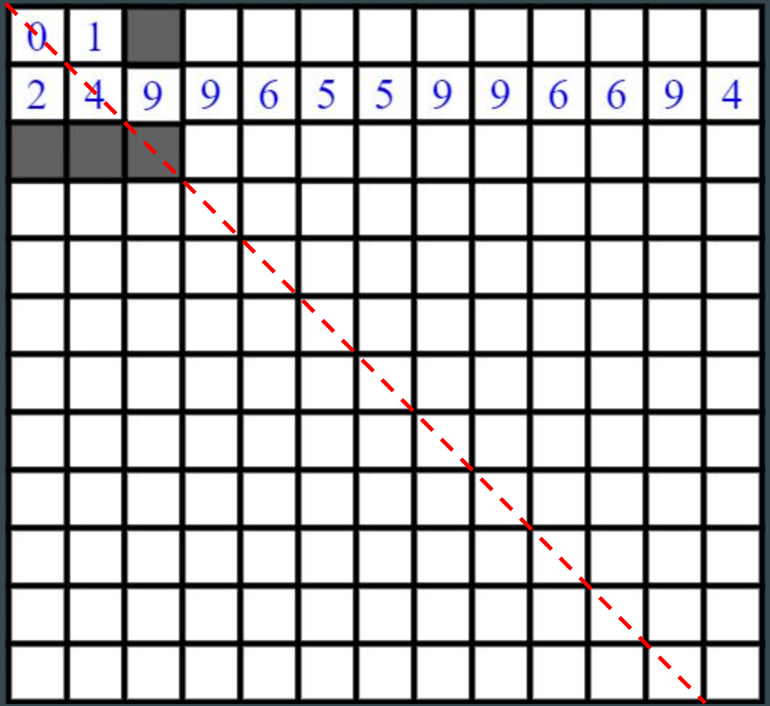


Minesweeper 3:

So we need to place 01 and 02 in the top left corner. There are two ways of placing these numbers, which are symmetric across a diagonal running down-right from the top-left corner. So, we will consider it symmetrically and see if we run into issues in one specific orientation. We will place 01 going down and 02 going across, with blocks after to end the numbers.

Minesweeper 3

01 02 02
10 14 14
29 92 536
924 4959
7544 74947
99567 6994993
7494942
2944999695
2499655996694



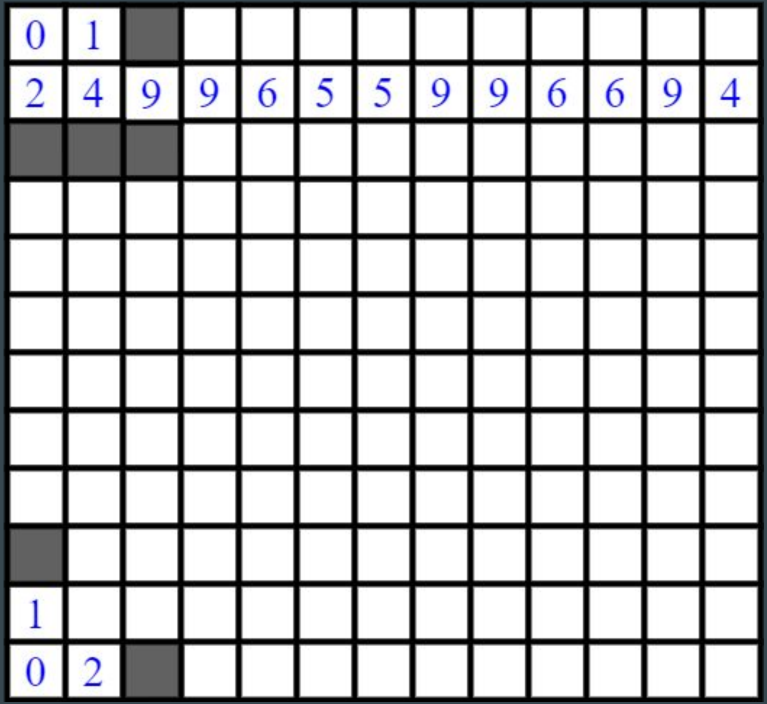
Minesweeper 3:

Now, r2c1 has all the mines it needs, so all other adjacent squares are non-mines. This forces a mine in r2c3 from the 2 in r1c2. Now we have a 2-digit number starting from r2c1 starting with 1, which can only be 14 (10 doesn't work because there are 4 mines adjacent already). Then, the only number that matches the first two digits going down column 2 is the 13-digit number, but there are only 12 squares vertically so it won't fit.

However, there are 13 squares horizontally! We need to reflect our symmetrical setup after all, obtaining the progress on the left.

Minesweeper 3

01 02 02
10 14 14
29 92 536
924 4959
7544 74947
99567 6994993
7494942
2944999695
2499655996694

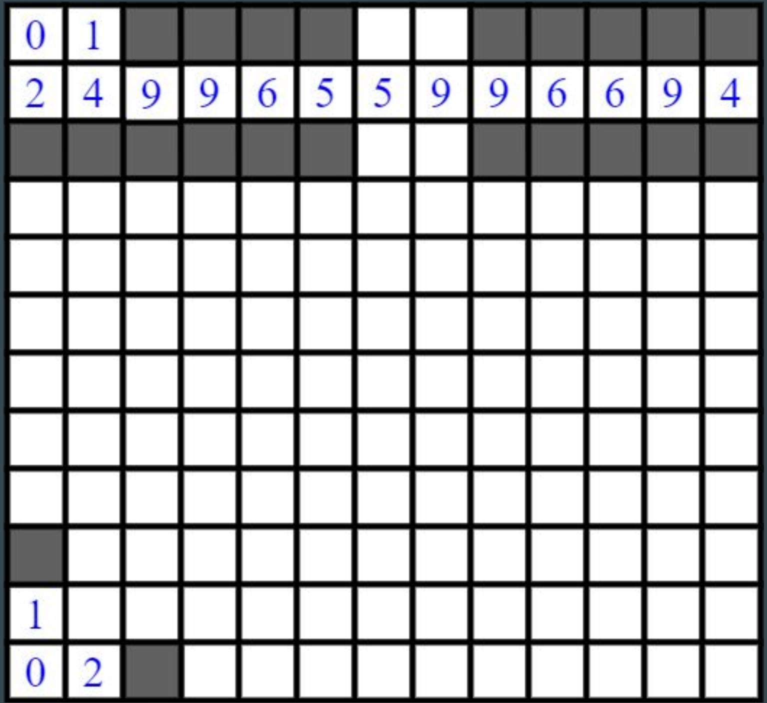


Minesweeper 3:

This actually allows us to place the other 0; since there is one number ending in 0 and one starting with 0, we knew that the other 0 would have to go in the top right or bottom left corner. (the bottom right corner doesn't work because we would need two numbers ending in 0) However, the 13-digit number has ruled out the top right corner, so the bottom left corner is the only remaining possibility, which lets us place 10 and the remaining 02.

Minesweeper 3

01 02 02
10 14 14
29 92 536
924 4959
7544 74947
99567 6994993
7494942
2944999695
2499655996694



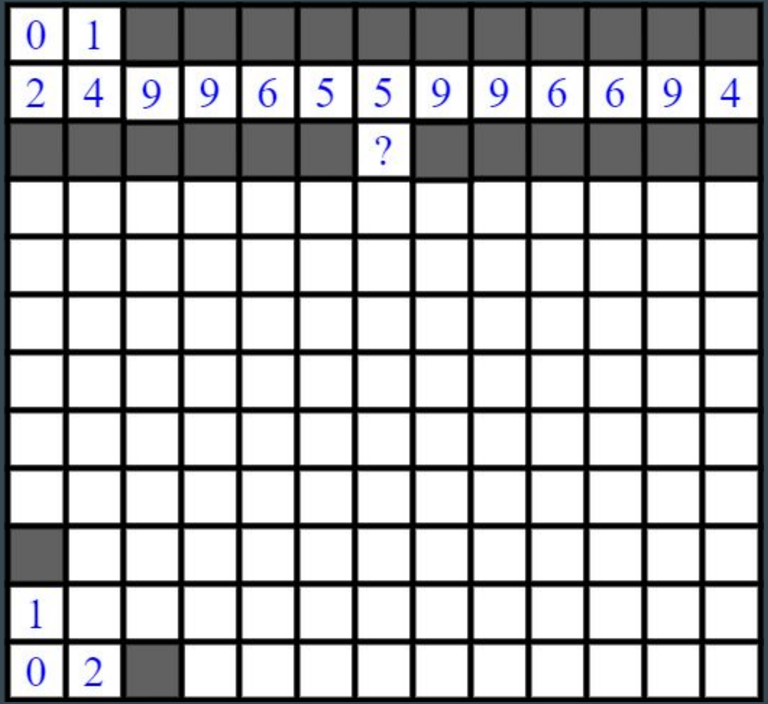
Minesweeper 3:

From here, the solver is intended to alternate back and forth between the two “seeds” of placed numbers to make progress. We will begin with the upper “seed”, but starting with the lower numbers is equally possible.

We can now place a lot of mines around the 13-digit number. Every 6 needs all unfilled squares around it to be mines, since they all only have 6 open squares around them. The ending 4 in r2c13 similarly can have all 4 mines placed.

Minesweeper 3

01 02 02
10 14 14
29 92 536
924 4959
7544 74947
99567 6994993
7494942
2944999695
2499655996694



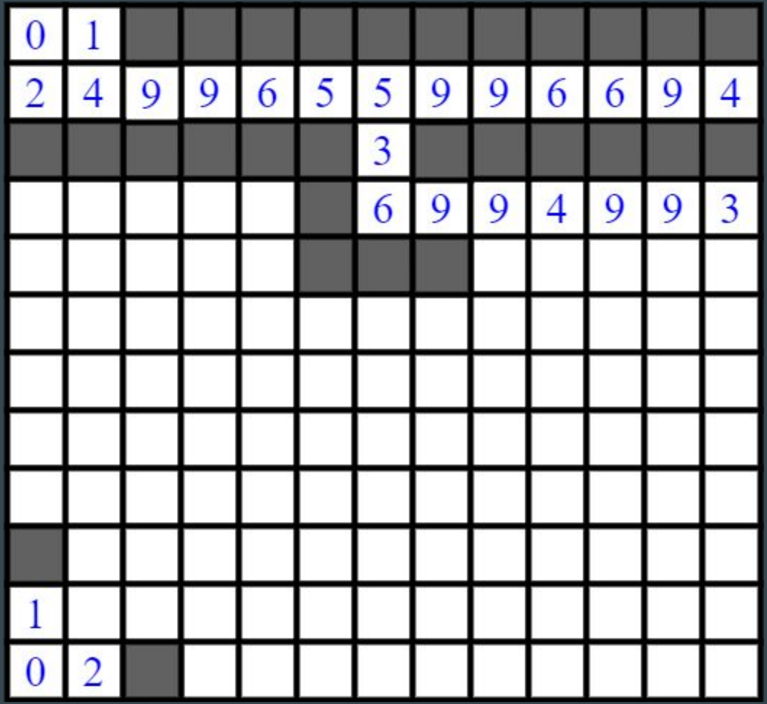
Minesweeper 3:

Continuing, both 5s need one more non-mine around them, which means it must go in column 7 (since those are the only squares that the 5 in r2c6 is adjacent to). So, there are two mines in column 8.

We know that r1c7 cannot be a number; if it was, r3c7 would be a mine, but then there would be no way to connect to the rest of the numbers in the grid. So, r1c7 is a mine and r3c7 is a non-mine.

Minesweeper 3

01 02 02
10 14 14
29 92 536
924 4959
7544 74947
99567 6994993
7494942
2944999695
2499655996694

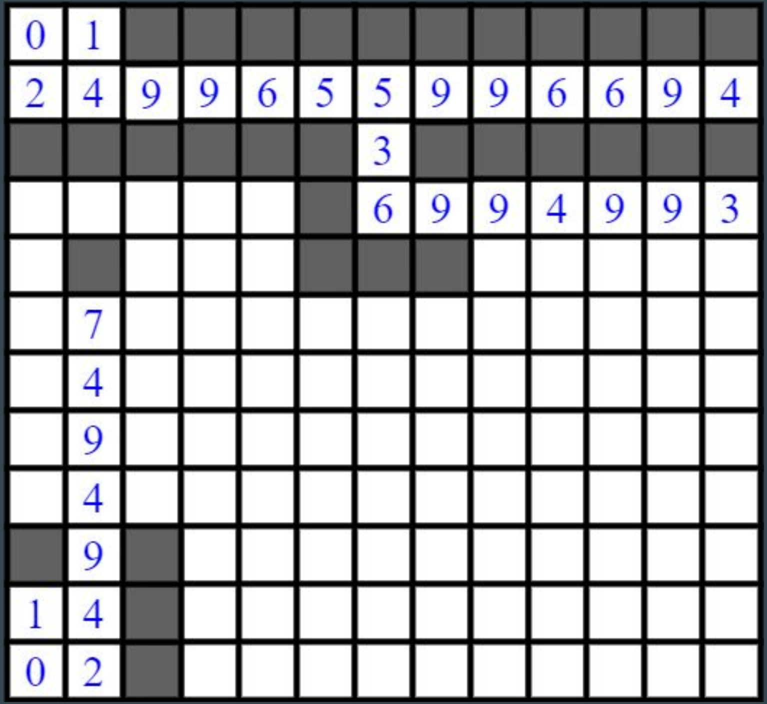


Minesweeper 3:

The only number starting with 5 is 536, so that comes down from r2c7. Now, if you check all of the numbers containing 6 that could intersect here, the only one that works is 6994993. The 10-digit number does not fit horizontally, and 99567 has issues with mines. Therefore we place 6994993 from r4c7. The 6 in r4c7 now needs all remaining unfilled squares to become mines.

Minesweeper 3

01 02 02
10 14 14
29 92 536
924 4959
7544 74947
99567 6994993
7494942
2944999695
2499655996694



Minesweeper 3:

It’s difficult to make progress from the upper section now, so we pivot to the lower numbers.

This setup is similar to the beginning of the upper seed, just reflected. We can place non-mines in r11c2 and r12c2, which puts a mine in r12c3. This forces the number going across from r11c1 to be 14, and then the only number ending in 42 is 7494942, so we can place that vertically ending in r12c2.

Minesweeper 3

01 02 02

10 14 14

29 92 536

924 4959

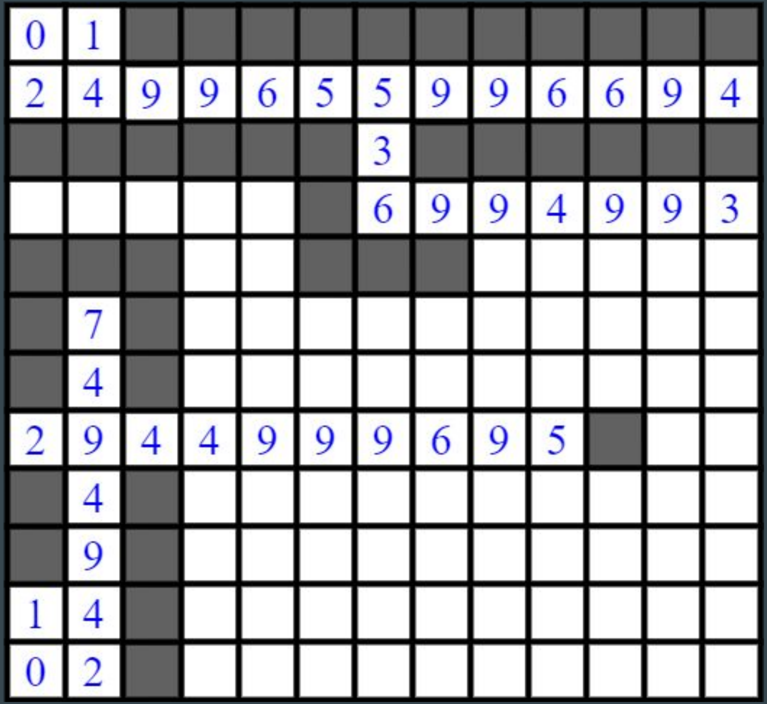
7544 74947

99567 6994993

7494942

2944999695

2499655996694

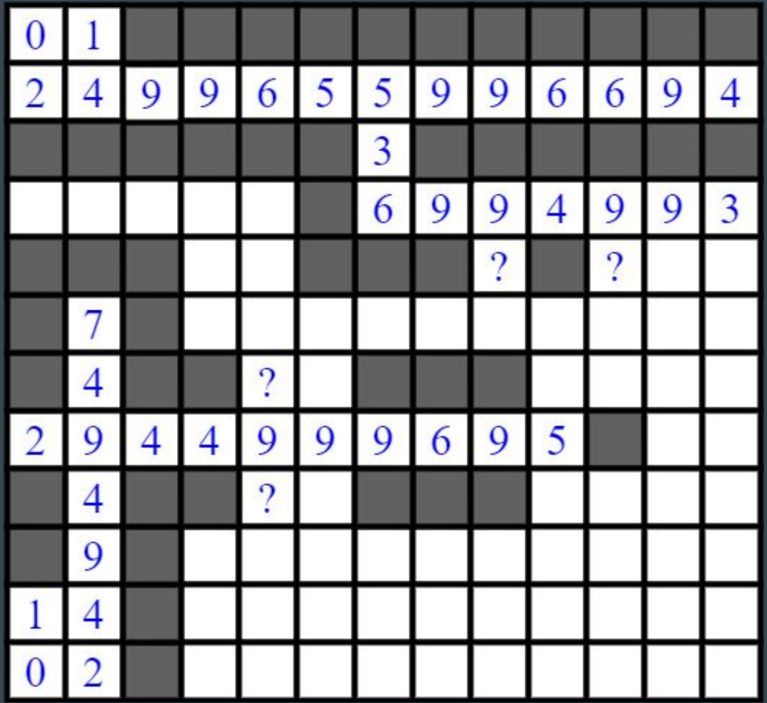


Minesweeper 3:

We can place mines around the 7 in r6c2, which places 4 mines around the 4 in r7c2. This means we have 2 non-mines in r8c1 and r8c3, which places the rest of the mines around the 4 in r9c2. Then, the only number that could be placed in row 8 with 9 in the second position is the 10-digit number; the other two numbers break because the mine counts don’t work out.

Minesweeper 3

01 02 02
10 14 14
29 92 536
924 4959
7544 74947
99567 6994993
7494942
2944999695
2499655996694



Minesweeper 3:

We can place mines around the 4 in r8c3, since it needs 2 more of the 2 available. Then the 4 in r8c4 forces two nonmines in r7c5 and r9c5. The 6 in r8c8 forces 6 mines around it, and we are done placing mines around the 10-digit number for now.

Now, look at the 4 in r4c10. The only number which starts with 4 is 4959, but that would extend up to the 5 in r8c10. Therefore, no number can come down from that 4, and there must be a mine underneath the 4, which forces the other two adjacent squares to be nonmines.

Minesweeper 3

01 02 02

10 14 14

29 92 536

924 4959

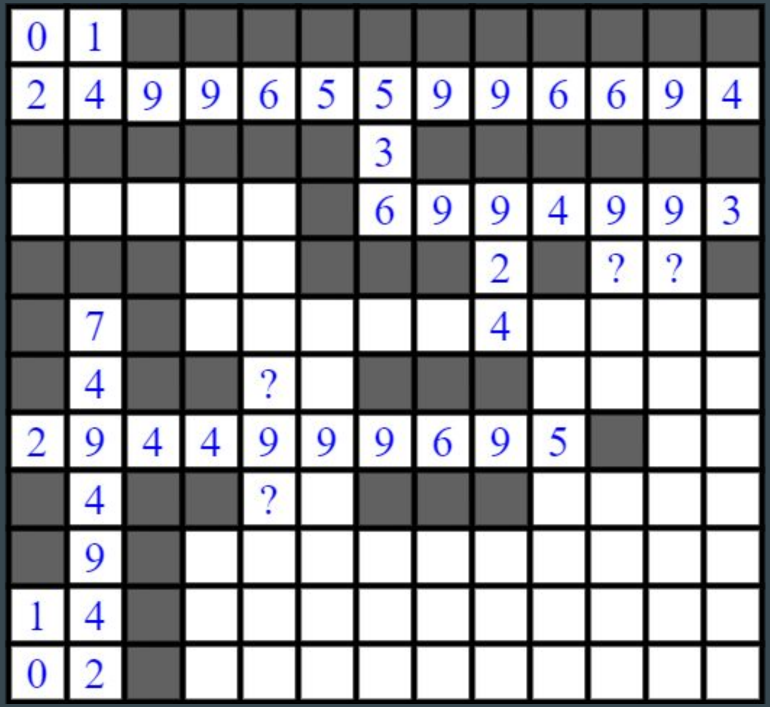
7544 74947

99567 6994993

7494942

2944999695

2499655996694



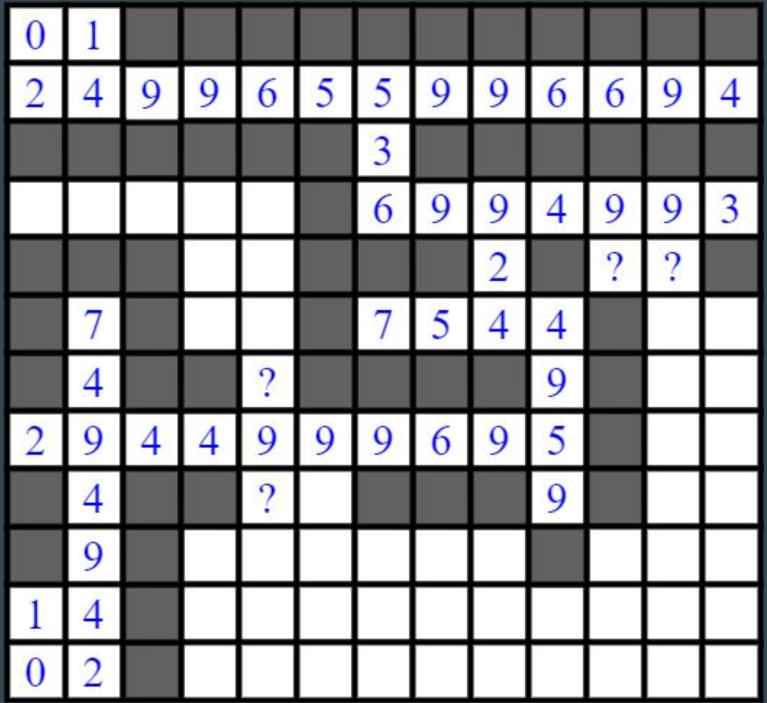
Minesweeper 3:

We can also notice that there is no number starting with 3, meaning there must be a mine under the 3 in r4c13, and thus a nonmine in r4c12.

Now, consider the number coming down from the 9 in r4c9. It has to be 3 digits or less, meaning it is either 92 or 924. But 92 doesn't work, since there would be another mine beneath the 2, which would put at least 3 mines around a 2 square which is impossible. Therefore 924 is the number coming down from r4c9.

Minesweeper 3

01 02 02
10 14 14
29 92 536
924 4959
7544 74947
99567 6994993
7494942
2944999695
2499655996694



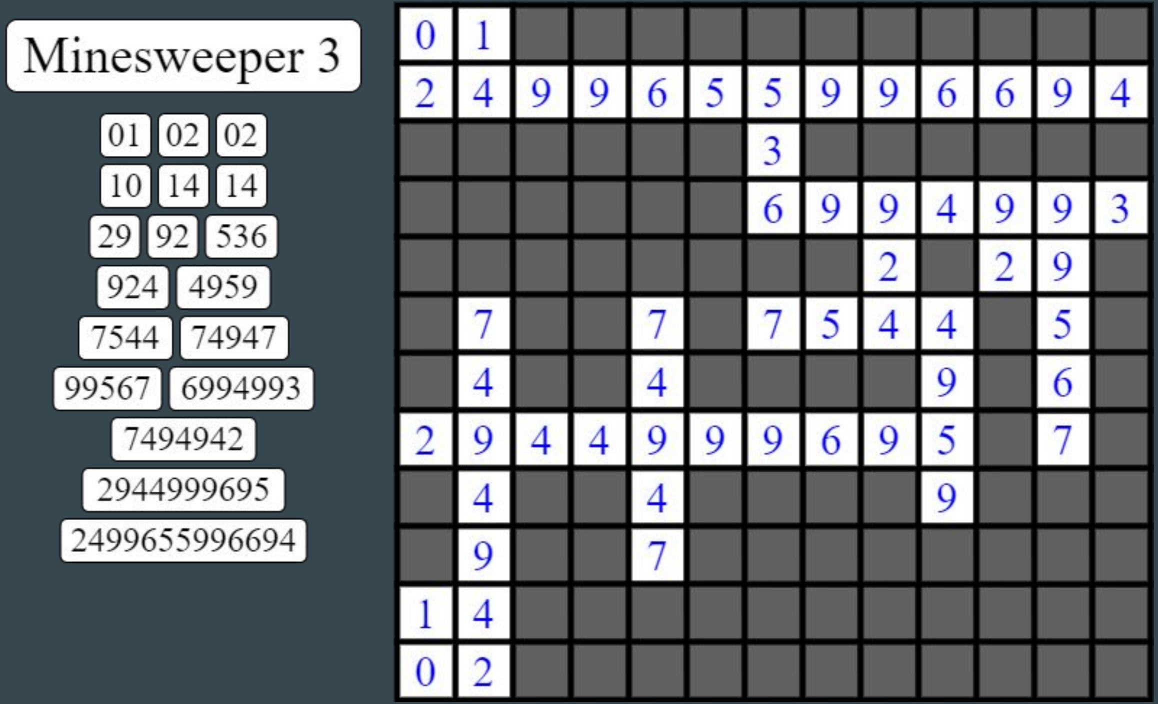
Minesweeper 3:

There are 4 mines around the 4 in r6c9, so the remaining unfilled squares around it are nonmines.

This means we need a number going down from r6c10 with a 5 in the third position, which can only be 4959.

We can fill in all mines surrounding the 4 and 5 in this number, since all remaining squares around them are forced to be mines.

We also need a number ending in 44 in row 6, which is 7544, and we fill in the mines around the 7.



Minesweeper 3:

From r4c11 we need a two-digit number starting with 9 (going down) which is 92, which means the other number starting from 9 (r4c12) is 99567. We can fill in the mines around 99567.

And at last, the last number must be 74947 through the 9 at r9c5. From here, since there are no numbers remaining, we fill all the other squares with mines (they cannot be digits because all digits must be connected).

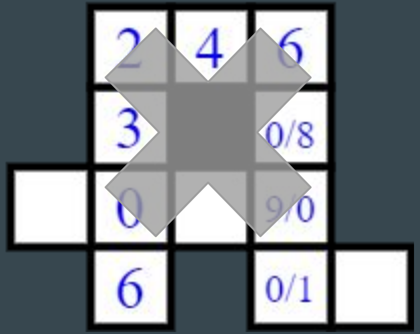
Reversible 1

26 246 0906

1086 2306

Reversible 1

26 246 0906
1086 2306



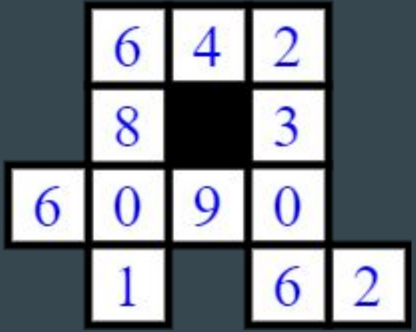
Reversible 1:

Notice that 246 and 2306 have to intersect each other at 2, because the 2 in 246 is part of a 4-digit number and the only 4-digit number with 2 is 2306.

Then, try placing 246 forwards in row 1. We would need 2306 coming down column 2. But then we are forced to have either a 1 or 0 in the 2-digit number, which is impossible because that number is 26.

Reversible 1

26 246 0906
1086 2306



Reversible 1:

Therefore 246 must go backwards in row 1. This forces 0906 backwards in row 3 (since no other number starts or ends with 0)

Then we have 1086 going up column 2, as the last 4 digit number.

Finally we place 26 right-to-left in row 4 to finish the puzzle.

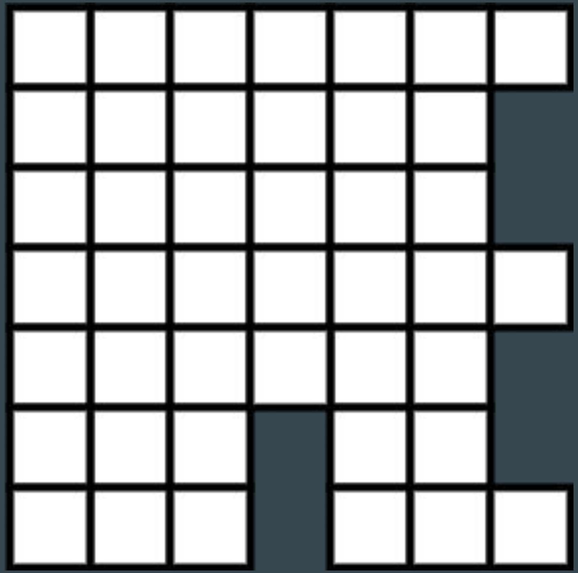
Reversible 2

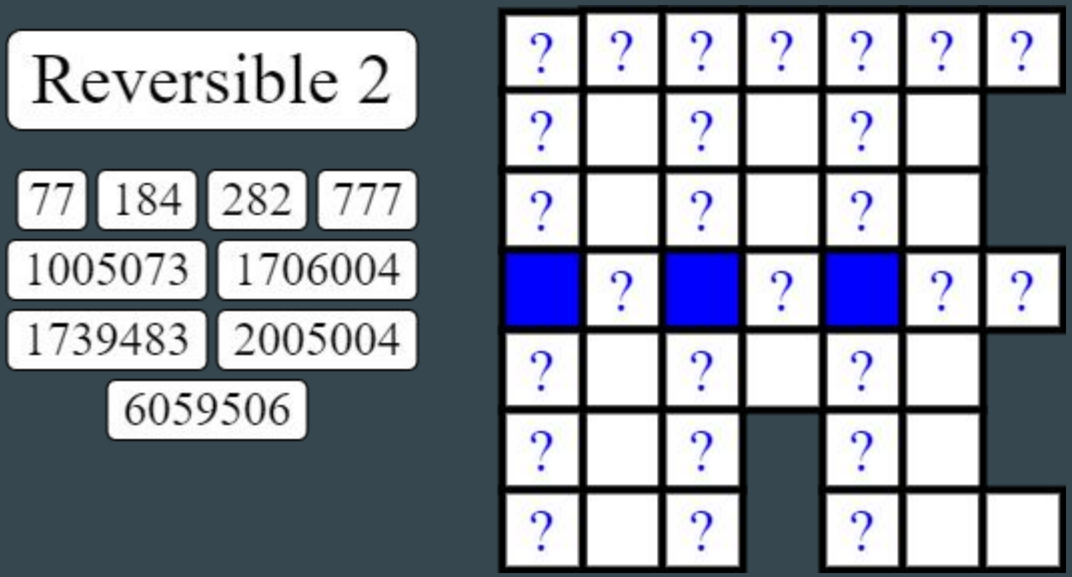
77 184 282 777

1005073 1706004

1739483 2005004

6059506





The blue boxes mark the intersections we're concerned with.

Reversible 2:

Notice that similarly to Blocks, no two 7-digit numbers can be placed in adjacent rows/columns since they would need at least 7 numbers that are not 7 digits long, which are not available.

Therefore, we must place 3 7-digit numbers vertically and 2 horizontally. Further, the number going horizontally through row 4 must contain at least 3 of the middle digits of the other 7-digit numbers, because that's where the intersections occur.

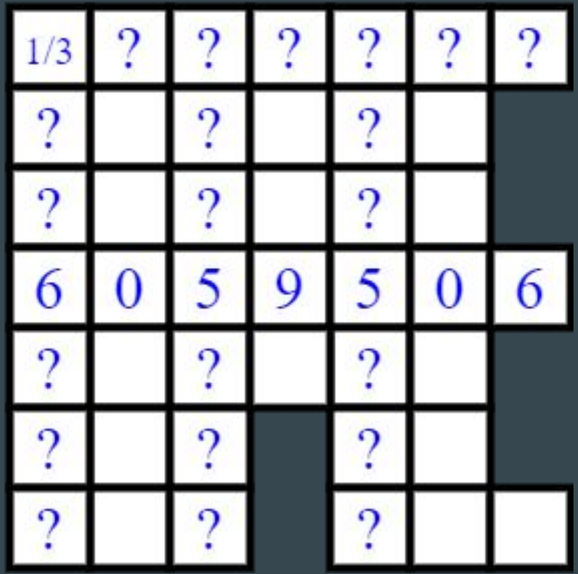
Reversible 2

77 184 282 777

1005073 1706004

1739483 2005004

6059506



Reversible 2:

The middle digits of the 5 7-digit numbers are 5,6,9,5,9. Only the number 6059506 contains enough of these digits to be the number in row 4. Since this number is a palindrome, we can actually place it directly into row 4 in either orientation: they are equivalent.

Then, since the intersection squares now have to be 6,5,5, we know that 1739483 must be the other horizontal 7-digit number. This means r1c1 is either a 1 or a 3.

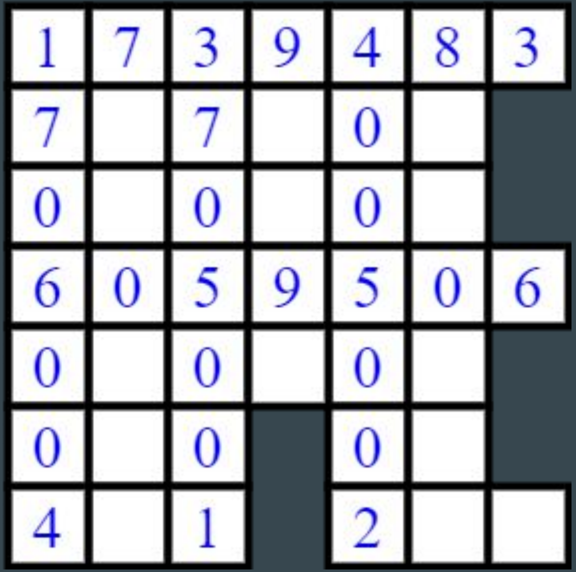
Reversible 2

77 184 282 777

1005073 1706004

1739483 2005004

6059506



Reversible 2:

In column 1, we know that we need the number 1706004 (since the middle digit is a 6). Because the top digit can't be 4, we know that 1706004 must go top to bottom in column 1, which forces 1739483 to go left to right in row 1.

The information in row 1 allows us to place the last two 7-digit numbers, based on their first and last digits.

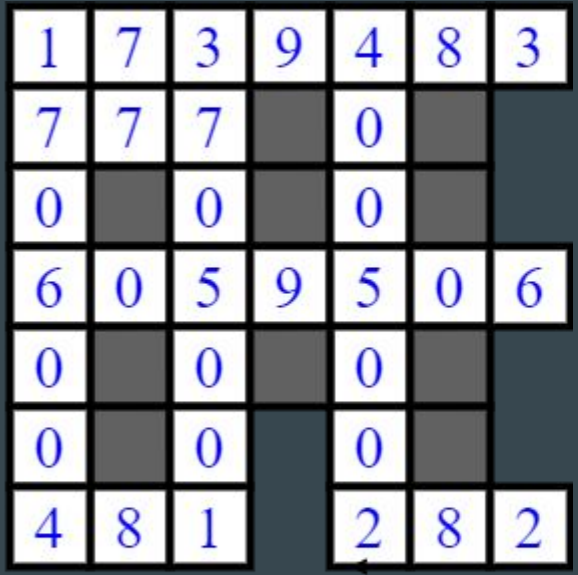
Reversible 2

77 184 282 777

1005073 1706004

1739483 2005004

6059506



Reversible 2:

Now, all the remaining "small" numbers must intersect the larger numbers. We can place 282 in the bottom right, 184 backwards in the bottom left, and by placing a 7 in r2c2, we complete 77 and 777, and with them we finish the puzzle. All that is left to do is to place the missing blocks, and the puzzle is complete.

Reversible 3

12 12 12

14 15 15

16 17 18 19

021 022 023

024 025 026

028 214 218

1812

02720 62029

1333211135554

1666377759992

1666544434442

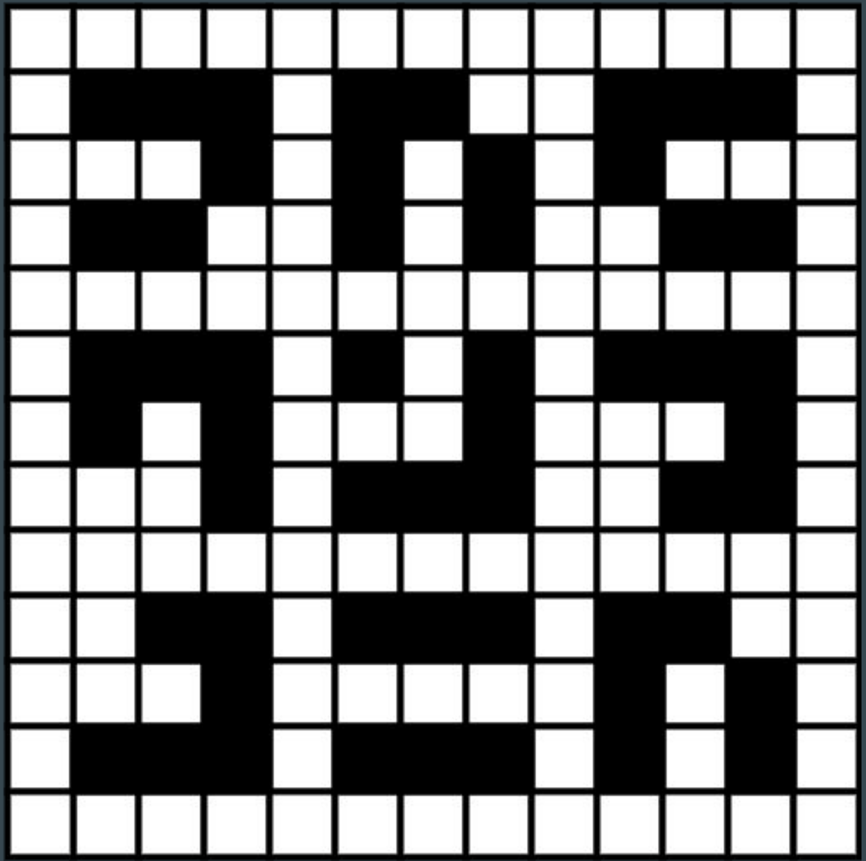
1999377728884

2888577718883

2999122252223

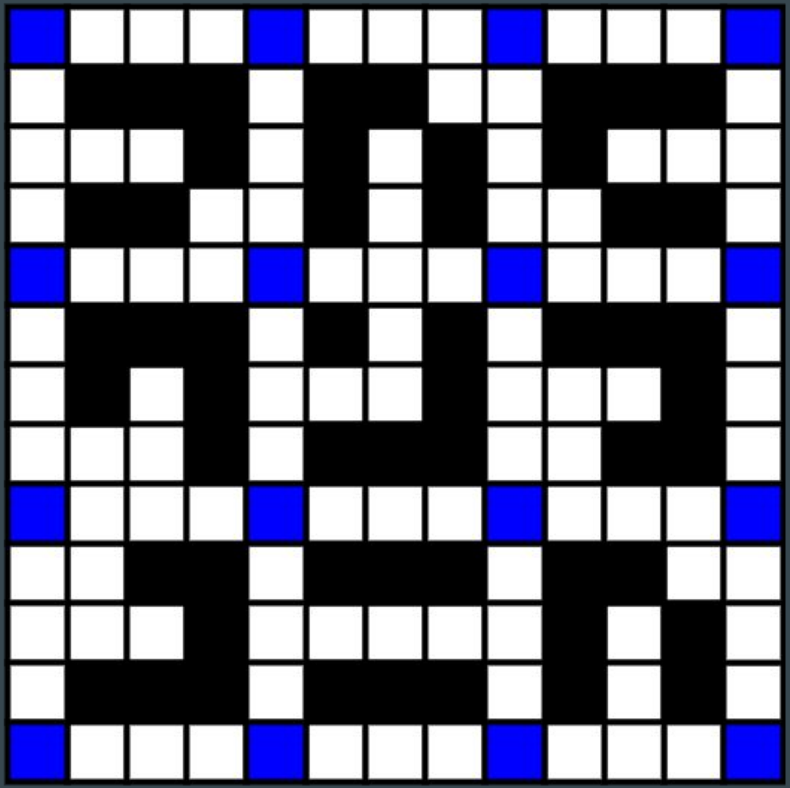
3555133321114

3555244416664



Reversible 3

12 12 12
14 15 15
16 17 18 19
021 022 023
024 025 026
028 214 218
1812
02720 62029
1333211135554
1666377759992
1666544434442
1999377728884
2888577718883
2999122252223
3555133321114
3555244416664

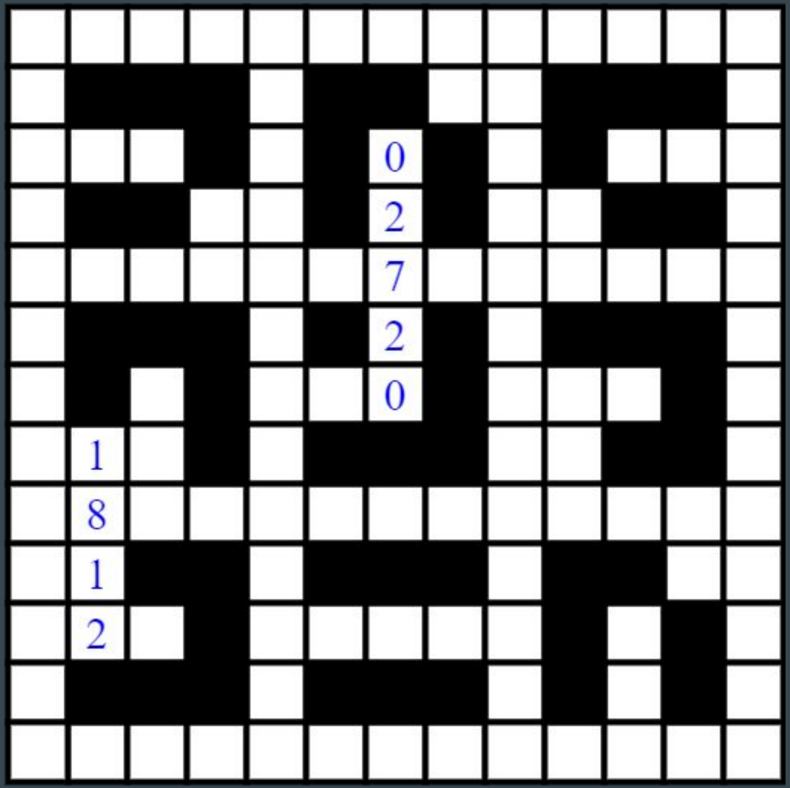


Reversible 3:

Before we get started, let's introduce some important concepts that are key to solving this puzzle. Observe that each 13-digit number has 4 "intersection points" in positions 1,5,9,13, and 3 "triples", which will be called the "outer" and "middle" triples based on where they're positioned. These concepts are vital to solving the puzzle. Intersection squares are highlighted in blue on the left, and the triples appear between the blue squares.

Reversible 3

12 12 12
14 15 15
16 17 18 19
021 022 023
024 025 026
028 214 218
1812
02720 62029
1333211135554
1666377759992
1666544434442
1999377728884
2888577718883
2999122252223
3555133321114
3555244416664



Reversible 3:

There is one 4-digit number, which must be placed in c2r6-9. If we place it bottom to top, then we need a 3-digit number with 2 in the middle in r6c1-3, which must contain a 0. But this puts a 0 in an 11-digit number or in the middle of a 3-digit number, which are both impossible. So 1812 must go top to bottom in c2r6-9 to start the puzzle.

We can also place 02720 in r3-7c6 since 62029 would put a 0 in an 11-digit number, and since it's a palindrome we can place it either way.

Reversible 3

12 12 12

14 15 15

16 17 18 19

021 022 023

024 025 026

028 214 218

1812

02720 62029

1333211135554

1666377759992

1666544434442

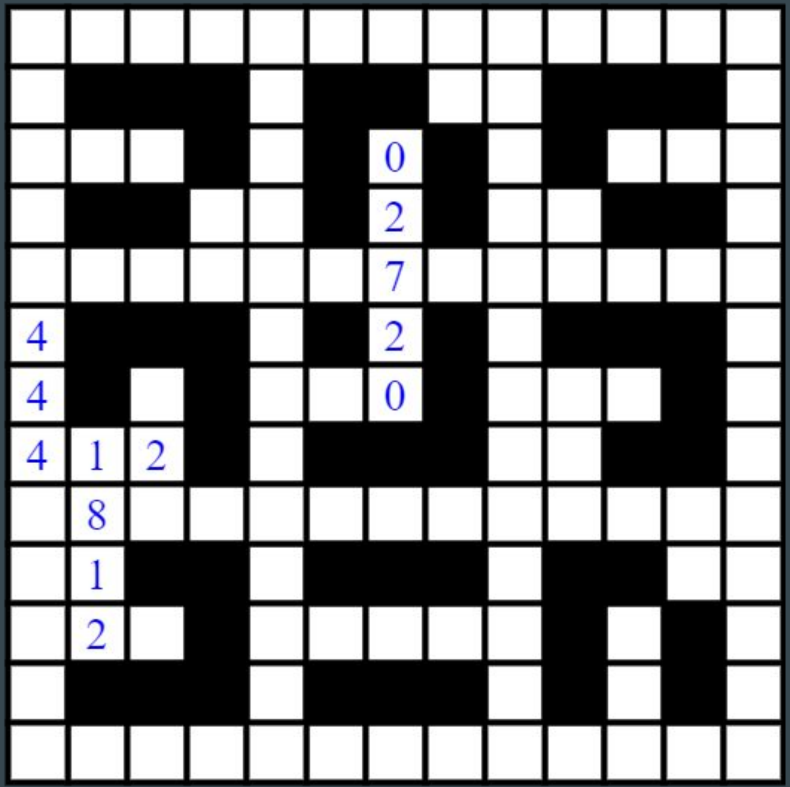
1999377728884

2888577718883

2999122252223

3555133321114

3555244416664



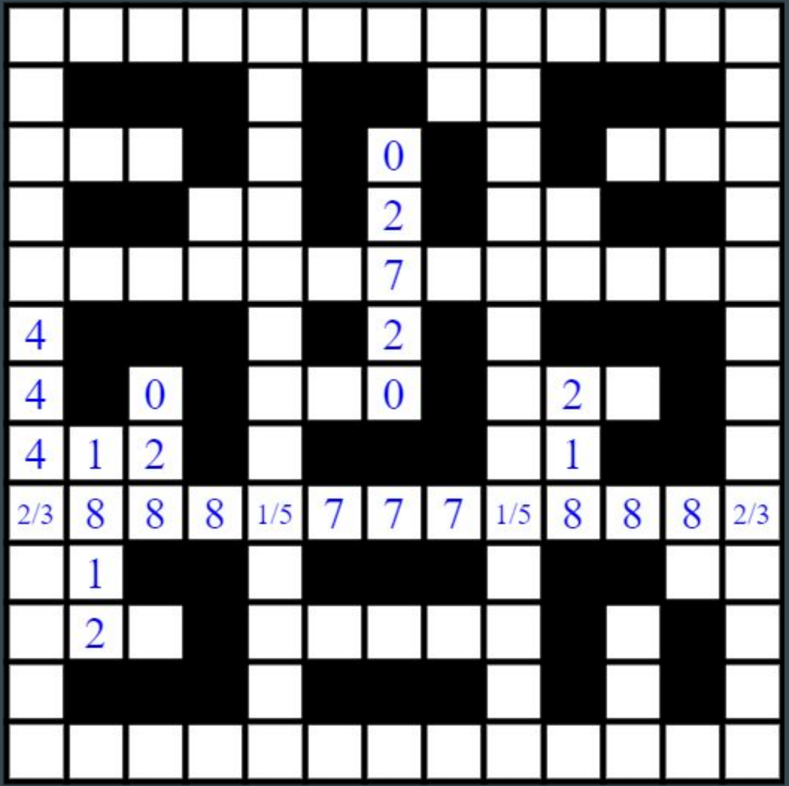
Reversible 3:

We now need a 3 digit number with 1 in the middle across r8c1-3, which can only be 214 or 218. Either way, there must be a 2 in r8c3, since 4 and 8 are not the middle of a 3-digit number (r7-9c3). Then we get either 4 or 8 in r8c1.

However, 8 doesn't work, because no 13-digit number has 8 in the "middle 3" digits, so the number must be 214. This lets us fill in 4's in the other two "middle" positions.

Reversible 3

12 12 12
14 15 15
16 17 18 19
021 022 023
024 025 026
028 214 218
1812
02720 62029
1333211135554
1666377759992
1666544434442
1999377728884
2888577718883
2999122252223
3555133321114
3555244416664



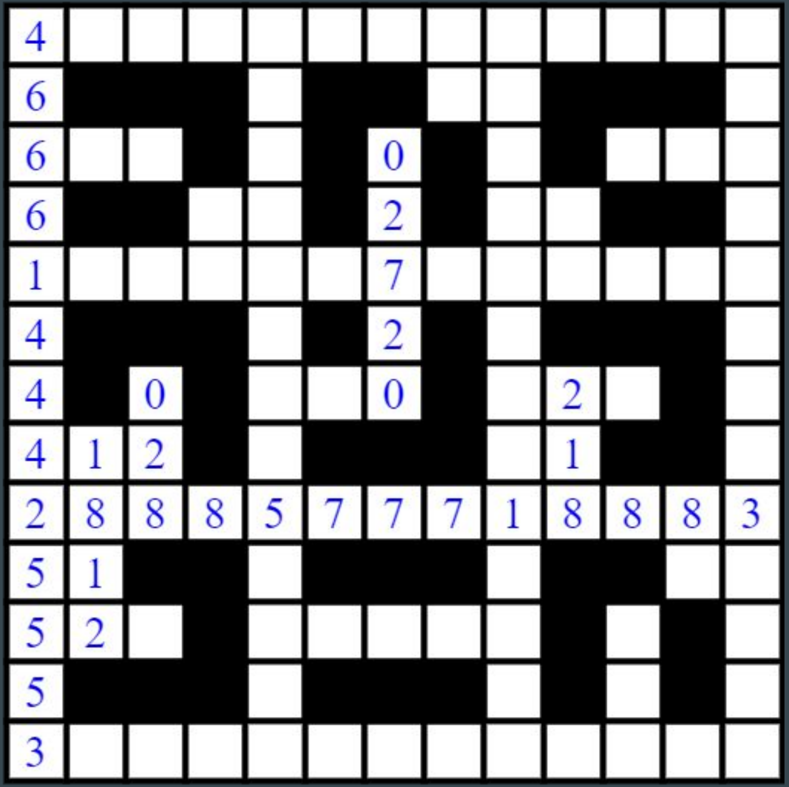
Reversible 3:

Then, r7-9c10 must be 218 going top-to-bottom (for similar reasons), which puts an 8 in r9c10. This means the "outer triples" of the number in row 9 must both be 8, which gives us only one possible number in row 9: 2888577718883.

This can be placed in either direction, which means r9c1 (and r9c13) can be 2 or 3. We can fill in the middle triple as well, and the two digits bordering the middle (r9c5,r9c9) have to be 1 or 5.

Reversible 3

12 12 12
14 15 15
16 17 18 19
021 022 023
024 025 026
028 214 218
1812
02720 62029
1333211135554
1666377759992
1666544434442
1999377728884
2888577718883
2999122252223
3555133321114
3555244416664



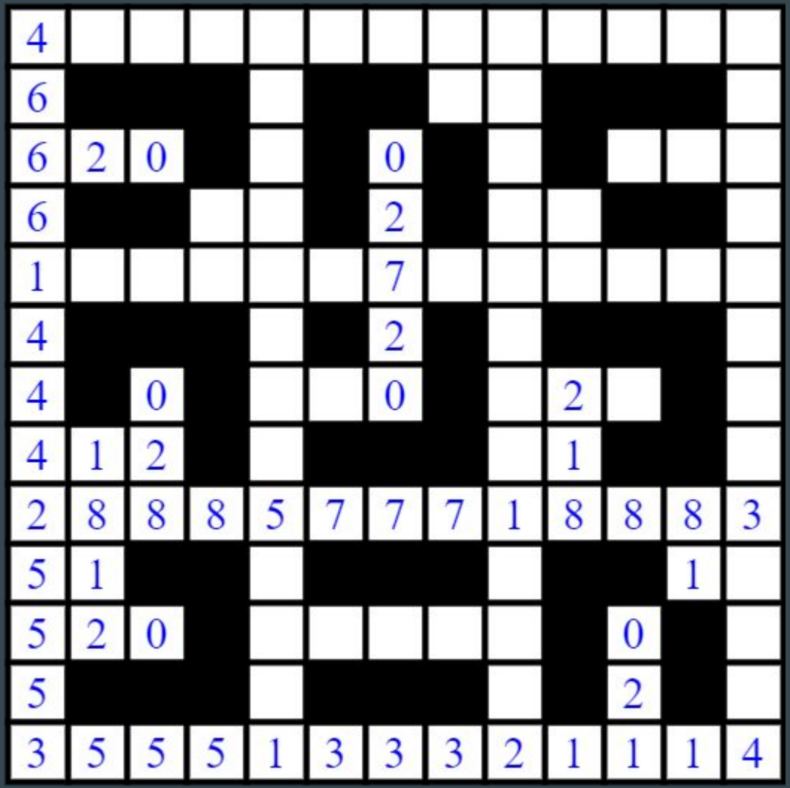
Reversible 3:

Now, we can place a number in column 1. First, notice that no 13-digit number starts or ends with 5. Therefore, no number with 5 in one of the “intersection points” (positions 1, 5, 9, or 13) can be placed in an outer row or column of the grid.

Now, there are two numbers that could go down column 1 (that have 4’s in the middle triple): they are 1666544434442, and 3555244416664. The first of these has a 5 in position 5, and so can’t go in an outer row. Therefore the number must be 3555244416664, and this number must go bottom to top to place a 2/3 in r9c1, which forces row 9 as well.

Reversible 3

12 12 12
14 15 15
16 17 18 19
021 022 023
024 025 026
028 214 218
1812
02720 62029
1333211135554
1666377759992
1666544434442
1999377728884
2888577718883
2999122252223
3555133321114
3555244416664



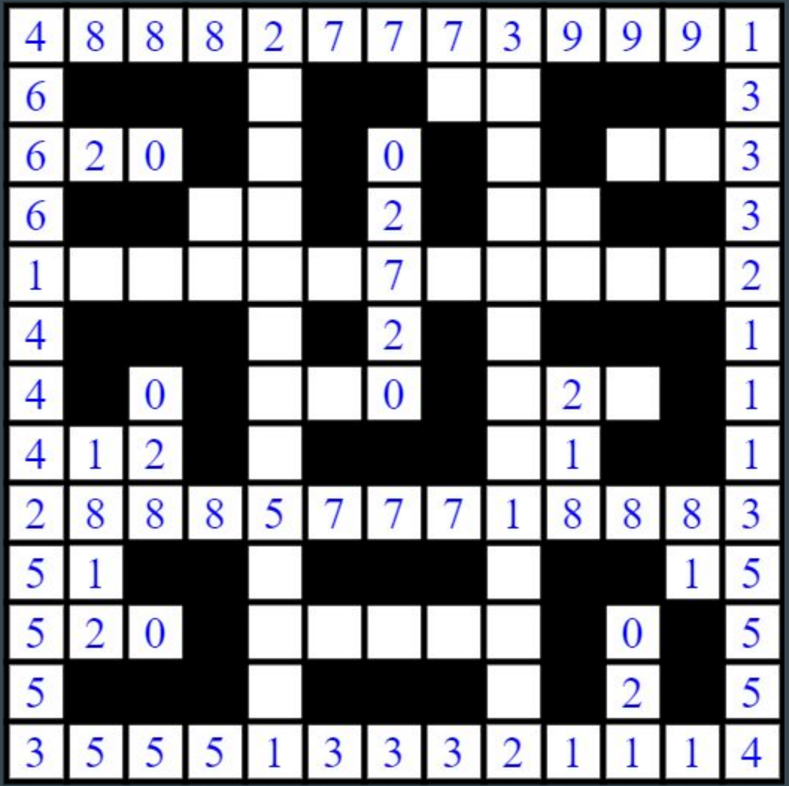
Reversible 3:

We can place 025 and 026 connected to column 1, and we place 18 connected to row 9. Now, we look at the bottom row. We have 3 remaining 13-digit numbers with 3 on either end. We can rule out 2999122252223 because it has a 5 intersection, and that's not allowed for outer numbers.

Then, notice that no 13-digit number has two of the same intersection numbers. This lets us rule out 3555244416664 as it places two 1s in column 9 in intersection points. So we place 3555133321114 in row 13, and attach 021 to it.

Reversible 3

12 12 12
14 15 15
16 17 18 19
021 022 023
024 025 026
028 214 218
1812
02720 62029
1333211135554
1666377759992
1666544434442
1999377728884
2888577718883
2999122252223
3555133321114
3555244416664



Reversible 3:

In column 13, we need a number with 34 in adjacent intersection points. This can only be 1333211135554 (top-to-bottom).

We then get 1999377728884 in row 1 (right to left) as the only remaining number with 1 and 4 on either end.

From here, most of the hard work is finished; we simply look at highly restricted positions for numbers and figure out the unique one that fits in properly.

Reversible 3

12 12 12
14 15 15
16 17 18 19
021 022 023
024 025 026
028 214 218
1812
02720 62029
1333211135554
1666377759992
1666544434442
1999377728884
2888577718883
2999122252223
3555133321114
3555244416664

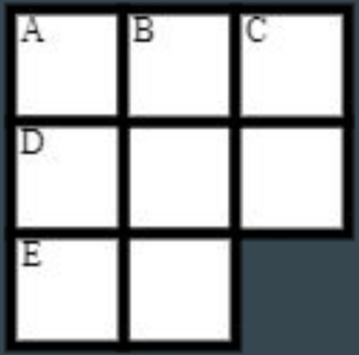
4	8	8	8	2	7	7	7	3	9	9	9	1
6				4			1	2				3
6	2	0		4		0		2		0	2	3
6			1	4		2		2	1			3
1	6	6	6	3	7	7	7	5	9	9	9	2
4				4		2		2				1
4		0		4	2	0		2	2	0		1
4	1	2		4				2	1			1
2	8	8	8	5	7	7	7	1	8	8	8	3
5	1			6				9			1	5
5	2	0		6	2	0	2	9		0		5
5				6				9		2		5
3	5	5	5	1	3	3	3	2	1	1	1	4

Reversible 3:

Column 5 can only fit 1666544434442 (bottom to top), and column 9 similarly gets 2999122252223 (bottom to top). We then get 1666377759992 in row 5.

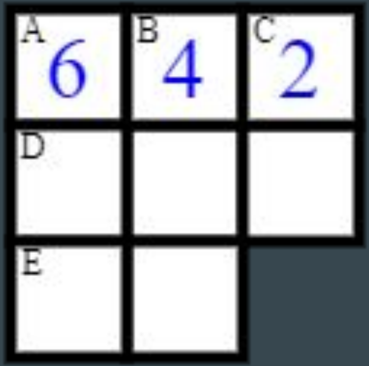
From here we just fill in some 0s, 1s, and 2s where they belong based on the 2 and 3-digit numbers (and observe that we get 62029 left to right in row 11), and we are done.

Clues 1



A Across: A number with only even digits, in strictly descending order (3)
D Across: A number not divisible by 9 (3)
E Across: A number divisible by 11 (2)
A Down: A number with consecutive digits, in ascending order (3)
B Down: A number where the product of the lesser-valued two digits
is equal to the largest digit (3)
C Down: A prime number greater than 10 (2)

Clues 1



A Across: A number with only even digits, in strictly descending order (3)
D Across: A number not divisible by 9 (3)
E Across: A number divisible by 11 (2)
A Down: A number with consecutive digits, in ascending order (3)
B Down: A number where the product of the lesser-valued two digits is equal to the largest digit (3)
C Down: A prime number greater than 10 (2)

Clues 1:

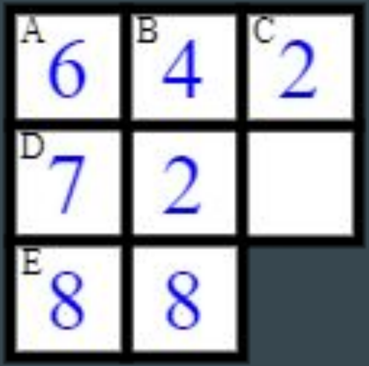
First of all, notice that the given lengths imply that there are no blocks in the puzzle.

Now, notice that C Down is greater than 10, so the last digit of A Across must be at least 2 (because it is even).

Then, we observe that the first digit of A Across is at most 6, because of A Down: if we place 8 in r1c1 then we need 10 or larger in r3c1 (to form an increasing sequence), which is impossible.

Therefore A Across must be 642.

Clues 1




```
A Across: A number with only even digits, in
strictly descending order (3)
D Across: A number not divisible by 9 (3)
E Across: A number divisible by 11 (2)
A Down: A number with consecutive digits, in
ascending order (3)
B Down: A number where the product of the
lesser-valued two digits is equal to the largest
digit (3)
C Down: A prime number greater than 10 (2)
```

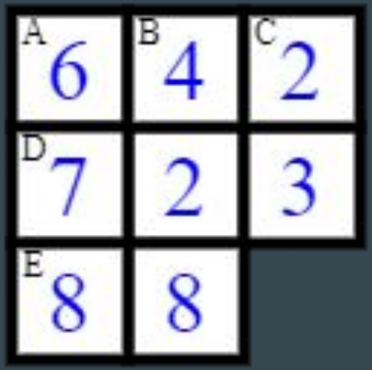
Clues 1:

Now A Down has to be 678 to fulfill the clue.

This means E Across has to be 88 to be a multiple of 11, since we know it starts with 8.

Then, B Down needs the product of 4 and its second digit to equal 8 (because 4*8 = 32 is greater than 10 and so can't be the last digit), so its second digit must be 2.

Clues 1



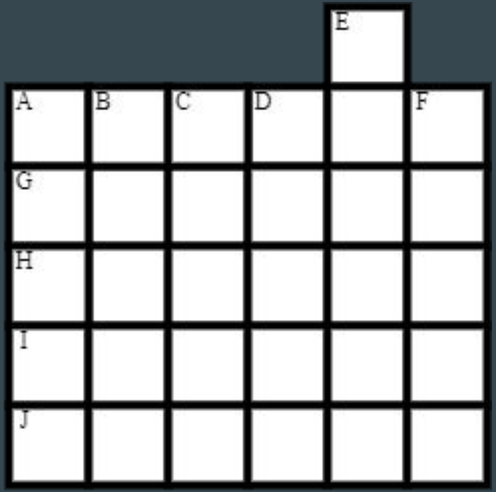
A Across: A number with only even digits, in strictly descending order (3)
D Across: A number not divisible by 9 (3)
E Across: A number divisible by 11 (2)
A Down: A number with consecutive digits, in ascending order (3)
B Down: A number where the product of the lesser-valued two digits is equal to the largest digit (3)
C Down: A prime number greater than 10 (2)

Clues 1:

Finally, there are two 2-digit numbers starting with 2 that are prime: they are 23 and 29. These are the two candidates for C Down.

However, we need D Across to not be a multiple of 9. We can check if 723 and 729 (the two possibilities from C down) are multiples of 9 by adding up their digits and seeing if they are multiples of 9. 7 + 2 + 3 = 12 is not a multiple of 9, but 7 + 2 + 9 = 18 is a multiple of 9, so therefore 723 and 23 are the correct choices to finish the puzzle.

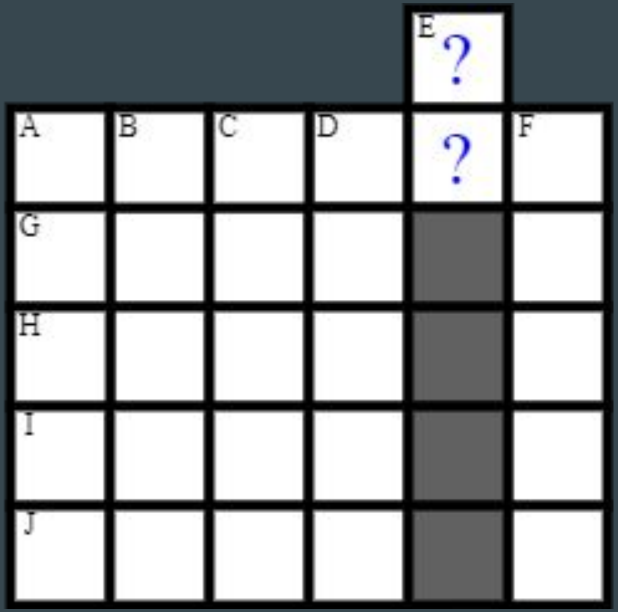
Clues 2



A Across: This palindrome is a multiple of 4
G Across: This odd number's digits are in strictly descending order
H Across: This number has exactly two distinct digits (4)
I Across: This number starts and ends with the same digit (4)
J Across: This number is the product of B Down's digits, and its leading digit is 2
A Down: This number only has even digits
B Down: The product of this number's digits has exactly 4 distinct
prime factors
C Down: Each digit of this number is 2 more than some digit of D down
D Down: Each digit of this number is 2 less than some digit of C down
E Down: This number is less than 10, and the number of blocks in the grid is half of this number. (2)
F Down: Its digits are in strictly ascending order, and 4 of these digits do not appear in any other number in the grid (5)

Note: to avoid clutter, not all clues will be shown on each slide of the solution. Only relevant clues will be present.

Clues 2



E Down: This number is less than 10, and the number of blocks in the grid is half of this number. (2)

F Down: Its digits are in strictly ascending order, and 4 of these digits do not appear in any other number in the grid (5)

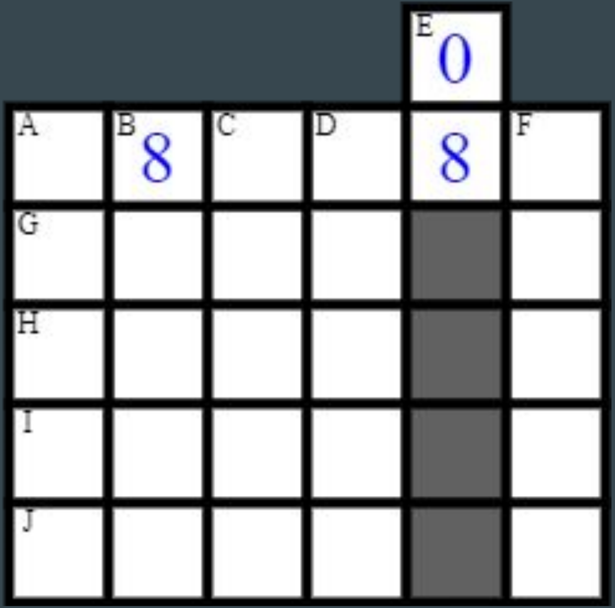
Clues 2:

We can first look at E Down. Since it is length 2, there must be a block in r3c5 to end the number, and r1-2c5 are both numbers.

Now we look at F Down. We know that its first digit must intersect A Across (which means it appears in another number), so it must have 5 digits to have four digits that don't appear in another number (which are the last 4 digits).

This means all squares to the left of those last 4 digits must be blocks, to prevent an across number from sharing a digit which is not allowed.

Clues 2



A Across: This palindrome is a multiple of 4

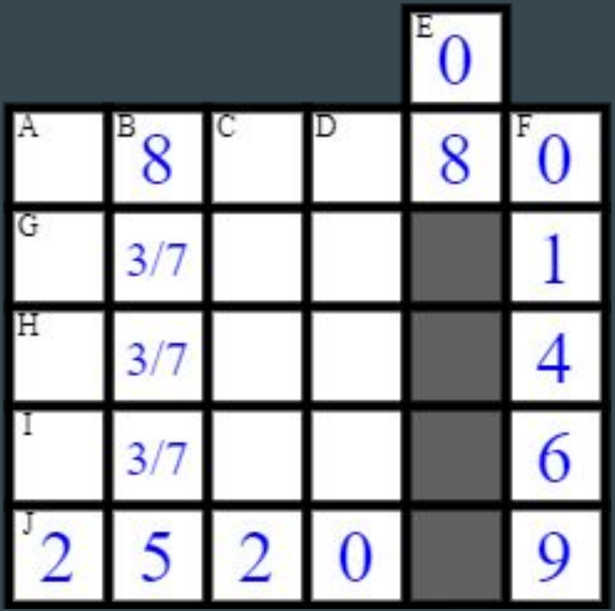
E Down: This number is less than 10, and the number of blocks in the grid is half of this number. (2)

Clues 2:

Now we return to E Down. Since the number of blocks is half of a number less than 10, it can be at most 4. We have already placed 4 blocks, so no other blocks may be placed, and we know that E down is 2 * 4 = 08.

Then, since A Across is a palindrome, we know that its second digit must also be 8.

Clues 2




```
B Down: The product of this number's digits has
exactly 4 distinct prime factors

F Down: Its digits are in strictly ascending order,
and 4 of these digits do not appear in any other
number in the grid (5)
```

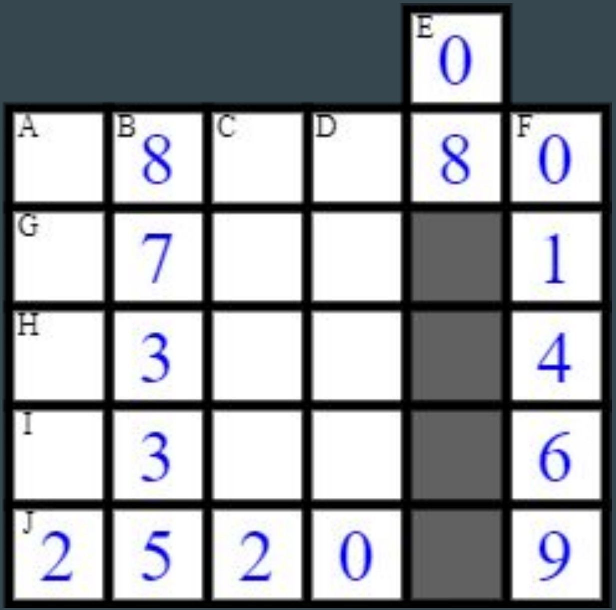
Clues 2:

The two possibilities for the digits of B Down (if order doesn't matter) are therefore 3,3,5,7,8 and 1,5,7,8,9. However, 1,5,7,8,9 breaks the puzzle, because we need 4 digits in F Down that appear in no other number.

We've already used 0 and 2, and then 1,5,7,8,9 would make a total of 7 digits that have to be different from the 4 digits in F Down. This means we would need 11 digits, which is impossible.

Therefore we only have 3,3,5,7,8 as the possible digits in B Down, and the leftover digits for F Down are hence 1,4,6, and 9. Since F Down is ascending order we can fill in those digits, and the first digit must be 0 to fulfill the ascending rule.

Clues 2



G Across: This odd number's digits are in strictly descending order

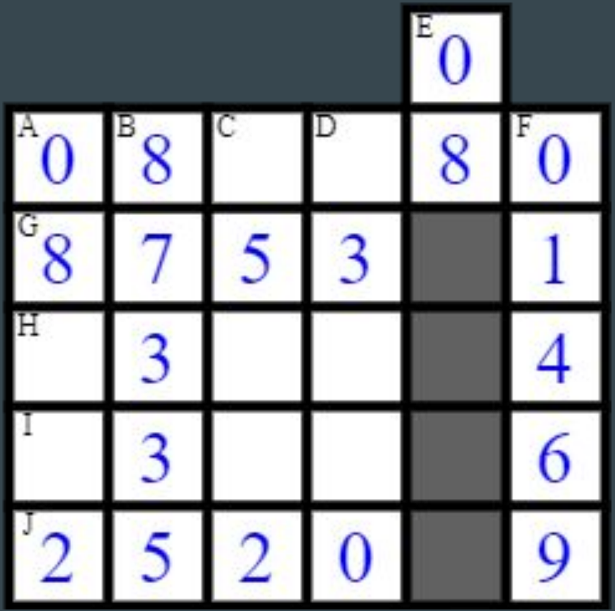
B Down: The product of this number's digits has exactly 4 distinct prime factors

Clues 2:

Now, G Across is odd, so the smallest digit it could end with is 3 (1 is ruled out because it is a digit in F Down that doesn't appear in other numbers). Since G Across's digits are also in descending order, its second digit must be larger than its last digit and hence larger than 3, which means it must be 7.

This forces the remaining two digits of B down to be 3, since we needed 2 3s and 1 7 to finish the number.

Clues 2



A Across: This palindrome is a multiple of 4

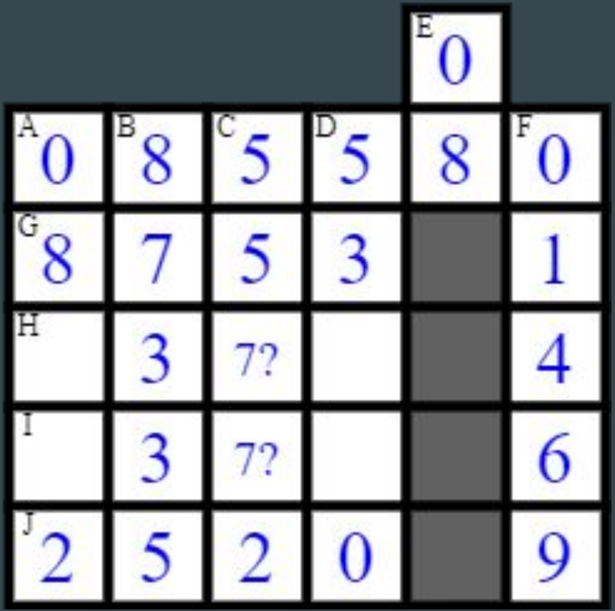
G Across: This odd number's digits are in strictly descending order

Clues 2:

In fact, our previous deduction forces G Across to be 8753. We must use digits from 0,2,3,5,7,8. This means that the last digit needs at least 3 digits lager than it, which means the largest it can be is 3. Therefore the last digit must be 3, and by similar reasoning we force the other digits.

We can also update the first digit of A Across to be 0 because A Across is a palindrome.

Clues 2



A Across: This palindrome is a multiple of 4

C Down: Each digit of this number is 2 more than some digit of D Down

D Down: Each digit of this number is 2 less than some digit of C Down

Clues 2:

Now, notice that r2c3 and r2c4 must be the same digit because A Across is a palindrome. We also know that r2c3 must be 2 more than some digit in D Down, and r2c4 must be 2 less than some digit in C Down.

The possible digits of C and D Down are 0,2,3,5,7,8 (1,4,6,9 are ruled out by F down). We have one sequence of digits (3,5,7) that increases by 2 twice, which is what is necessary to fulfill the conditions for r2c3 and r2c4. Therefore they are both 5 (forcing 3 in D Down, already present, and 7 in C Down).

Clues 2

				E 0	
A 0	B 8	C 5	D 5	8	F 0
G 8	7	5	3		1
H 2	3	2	3		4
I 0	3	7	0		6
J 2	5	2	0		9

I Across: This number starts and ends with the same digit (4)

A Down: This number only has even digits

D Down: Each digit of this number is 2 less than some digit of C Down

Clues 2:

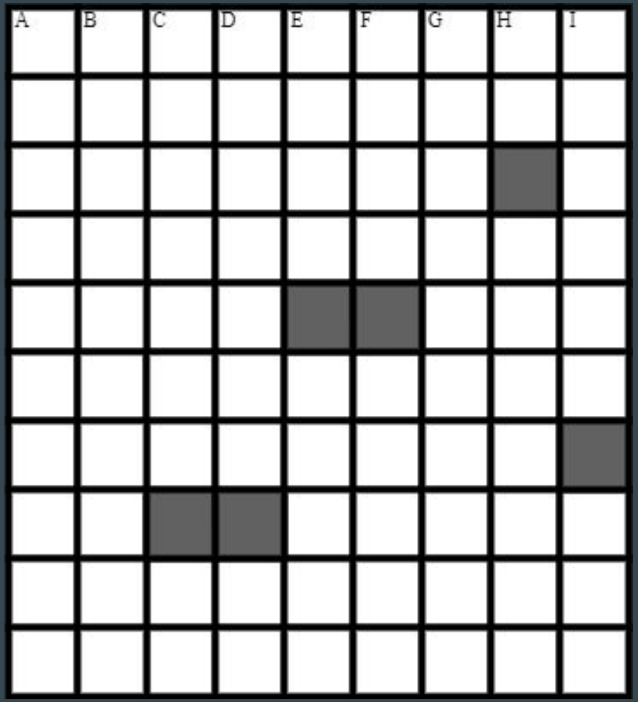
Now, I Across must start and end with the same digit, and from A Down we know that digit is even. Our options are 0, 2, and 8 (since 4 and 6 are removed by F Down), and of those only 0 can go in D Down. So we place 0 in r4c1 and r4c4 to finish the puzzle.

Clues 3

A	B	C	D	E	F	G	H	I

Note: to avoid clutter, not all clues will be shown on each slide of the solution. Only relevant clues will be present. Make sure to keep track of which clues apply to which rows, as this information will be discovered and then re-referenced in many instances.

Clues 3



A Down: The only number in this grid with every digit 0-9

B Down: The only number in this grid with repeated digits, with all 3 distinct odd digits placed above all 7 even digits

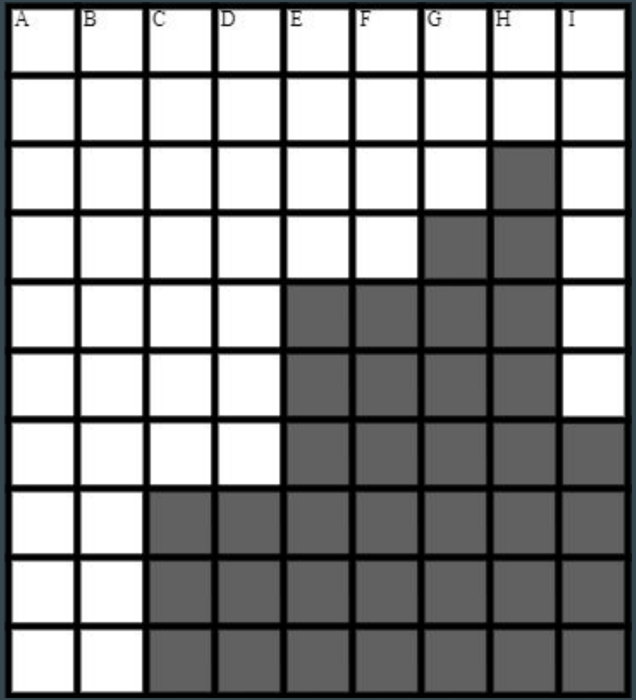
Clues 3:

Our first order of business is to get some blocks placed. We can use the lengths of the Down clues to place some blocks. A and B Down have 10 digits (every digit 0-9 and 3+7=10), so no blocks in those columns. Then every other Down clue besides G Down gives you its length, which allows us to place all the blocks shown on the left.

Also, it is important to recognize there are 10 Across clues, and we get 10 rows starting from A and B Down of at least two squares with digits. This means all Across numbers must start from column 1.

One last note to take: B Down is “the only number with repeated digits,” meaning every other number has distinct digits. This is really important.

Clues 3



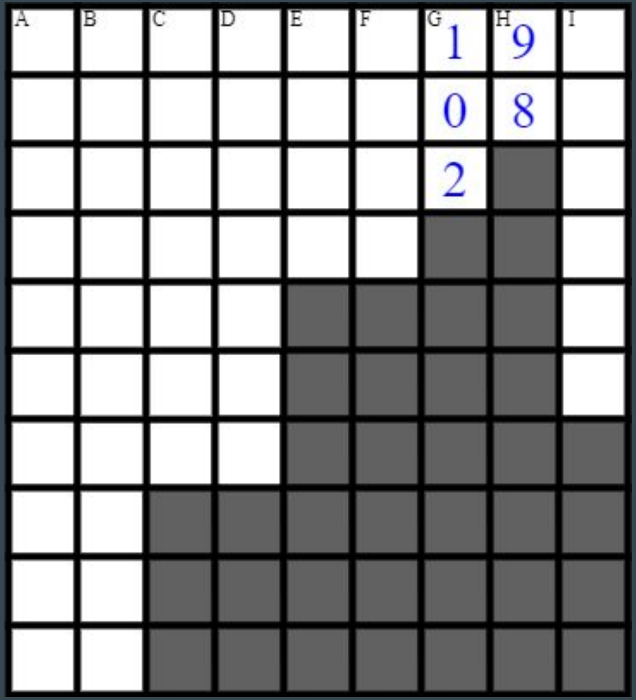
G Down: 4 more than H Down, and the only number in this grid with a unique length (number of digits)
I Down: An even number, and the only number in this grid filling squares that aren't filled by any other number (6)

Clues 3:

The fact that all Across numbers start from column 1 and all Down numbers start from row 1 allows us to fill in blocks down and to the right of blocks we've already filled in, based on the clue of I Down: if we put a number directly under or directly to the right of a block, it would have to either be part of one unique number or involve a number not starting on the first row or column. This lets us fill in a lot more blocks.

Also, G Down must have 3 digits; it is 4 more than H Down meaning it either has 2 digits or 3, but it can't have 2 since it has a unique number of digits compared to other numbers in the grid.

Clues 3



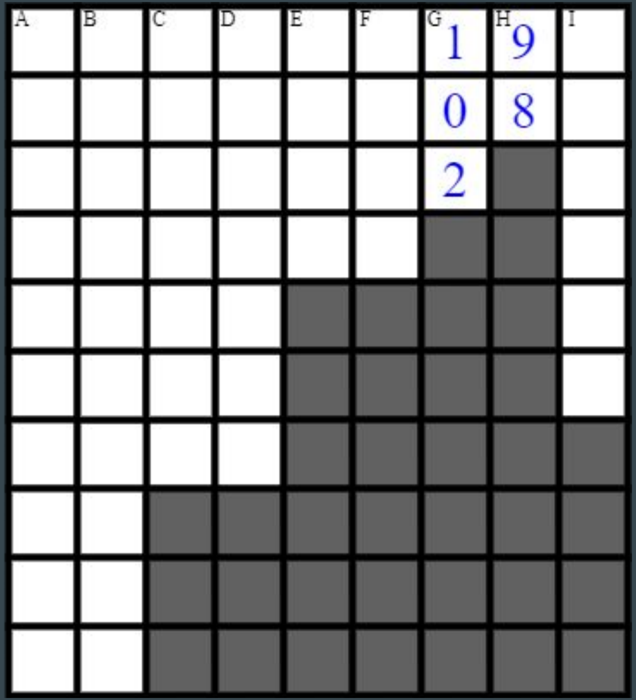
G Down: 4 more than H Down, and the only number in this grid with a unique length (number of digits)
H Down: The only number in this grid that shares a prime factor with every other number in the grid (2)

Clues 3:

Now, G and H Down are very constrained. G Down must be 100-103, and H Down must be 96-99. We may rule out the (100, 96) and (103, 99) pairs because they require a repeated digit in a number that isn't B Down. This leaves us with only (102,98) and (101, 97).

We can use the fact that H Down shares a prime factor with every number in the grid to say that (101, 97) is impossible, because 97 doesn't share a prime factor with 101. Therefore the only possibility is that G Down is 102 and H Down is 98.

Clues 3



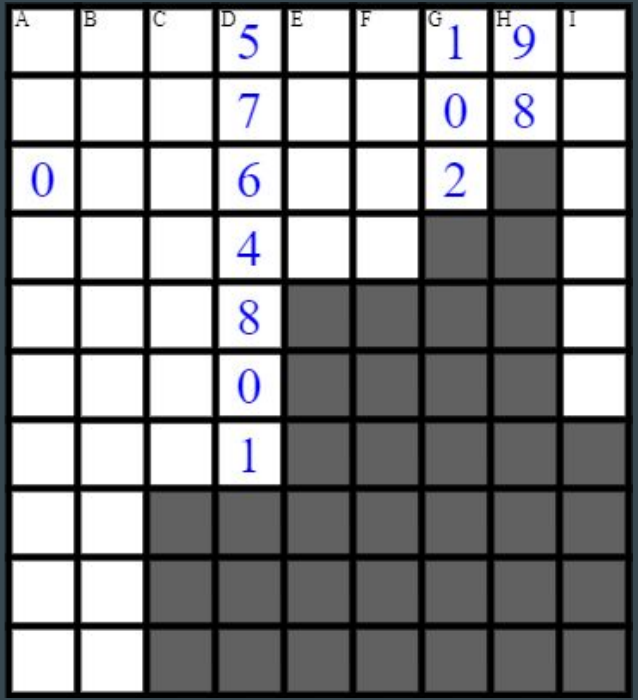
G Down: 4 more than H Down, and the only number in this grid with a unique length (number of digits)
H Down: The only number in this grid that shares a prime factor with every other number in the grid (2)

Clues 3:

Now, G and H Down are very constrained. G Down must be 100-103, and H Down must be 96-99. We may rule out the (100, 96) and (103, 99) pairs because they require a repeated digit in a number that isn't B Down. This leaves us with only (102,98) and (101, 97).

We can use the fact that H Down shares a prime factor with every number in the grid to say that (101, 97) is impossible, because 97 doesn't share a prime factor with 101. Therefore the only possibility is that G Down is 102 and H Down is 98.

Clues 3



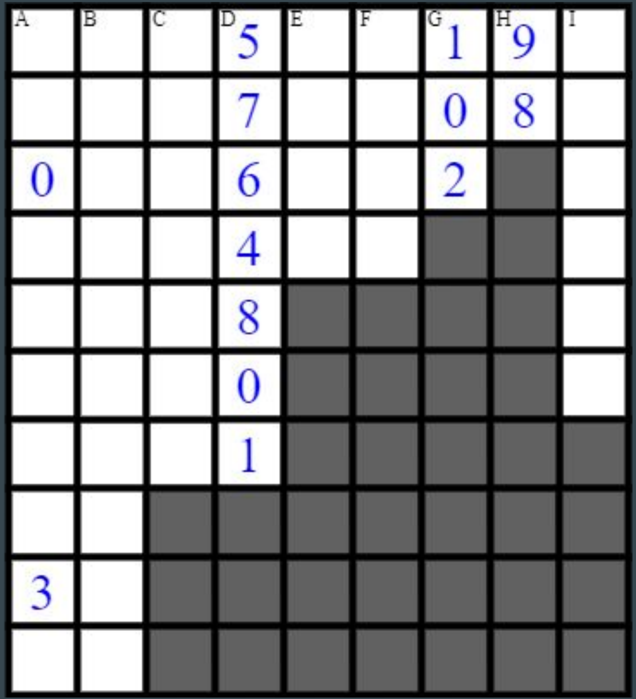
Across (Row 3): The only number in the grid with a leading zero, and all of its nonzero digits form a consecutive set (7)
Across (Row 9): A semiprime within 16 of both the number immediately above it, and the number immediately below it (2)

Clues 3:

Now, we are going to try to deduce which numbers some of the Across clues belong to. We know the clue with length 7 must be row 3, since no other row can have a number of length 7. This puts a 0 in r3c1.

Also, this allows us to place the clue involving semiprimes. There are no other numbers with leading 0s, meaning the distance between two numbers of different lengths must necessarily be more than 16. Therefore, we need three adjacent numbers of the same length, and since their leading digits must be different (because of no repeated digits), we get the semiprime clue in row 9.

Clues 3



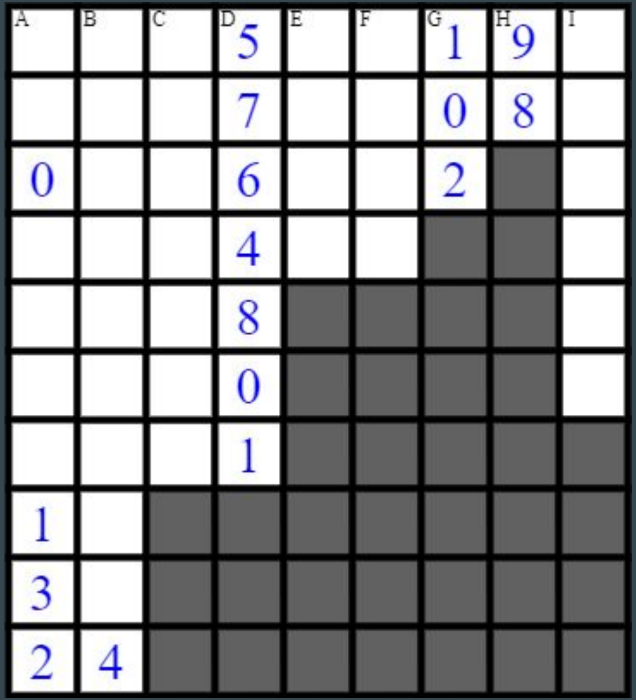
Row 9: A semiprime within 16 of both the number immediately above it, and the number immediately below it (2)
Across: The sum of the digits of the number immediately above it in the grid (2)
Across: A factorial (2)

Clues 3:

This means the other two Across clues must be in Rows 8 and 10. Further, we know the factorial must be 4! = 24, since smaller factorials start with 0 and larger factorials are more than 2 digits.

Further, our sum of digits is at most 9+8+7+1 = 25 in row 8 (row 10 would be at most 9+8 = 17). However, it can't start with 2 (because repeated 2s in column 1 is not allowed), so the actual maximum is 19. This means we use up the starting digits 0, 1, and 2 in column 1 which means the leading digit of row 9 is at least 3. In fact, it must exactly be 3, because 40 - 19 = 21 is greater than a distance of 16 from a neighboring number.

Clues 3



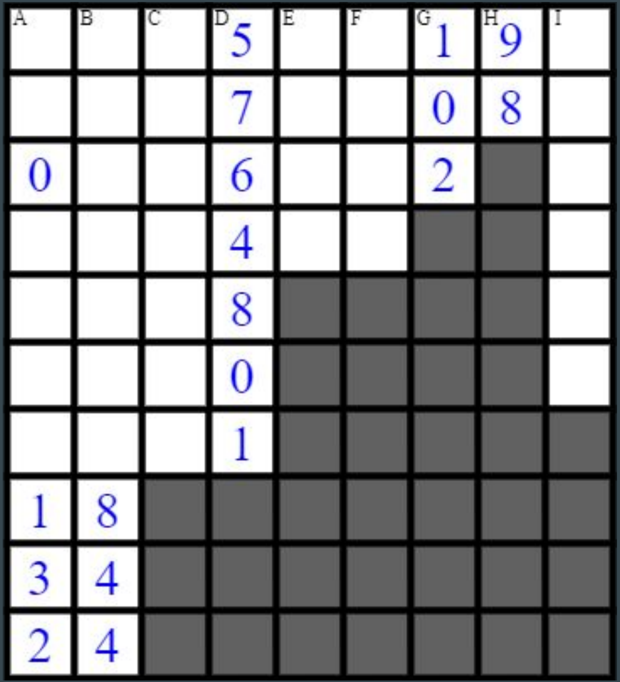
Row 9: A semiprime within 16 of both the number immediately above it, and the number immediately below it (2)
Across: (Row 8) The sum of the digits of the number immediately above it in the grid (2)
Across: (Row 10) A factorial (2)

Clues 3:

Now, we know that the sum of digits clue would be at most 3 + 9 = 12 in row 10, which is more than 16 away from 30, the smallest possible value of row 9. Therefore the sum of digits clue must go in row 8 (starting with 1 as discussed earlier) and the factorial in row 10, which is 24.

Now, there are three semiprimes between 30 and 35 (higher than 35 would force a distance of more than 16 between row 9 and row 8), which are 33, 34 and 35. (continued on next slide).

Clues 3



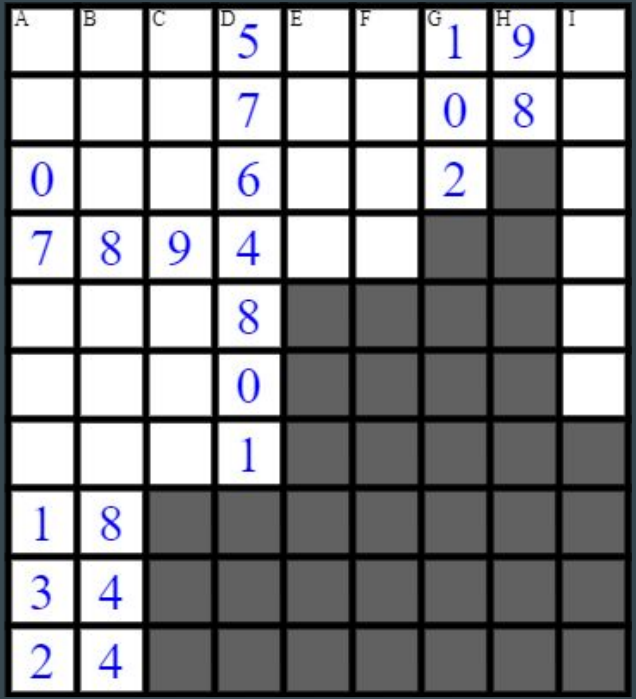
Row 9: A semiprime within 16 of both the number immediately above it, and the number immediately below it (2)
Row 10: The sum of the digits of the number immediately above it in the grid (2)
B Down: The only number in this grid with repeated digits, with all 3 distinct odd digits placed above all 7 even digits

Clues 3:

The possibilities for row 9 are 33,34,35. However, B Down tells us that the second digit of Row 9 is even, meaning 34 is the only option for row 9.

B Down also rules out 19 as a possibility for row 8, so the only number within 16 that's possible is 18.

Clues 3

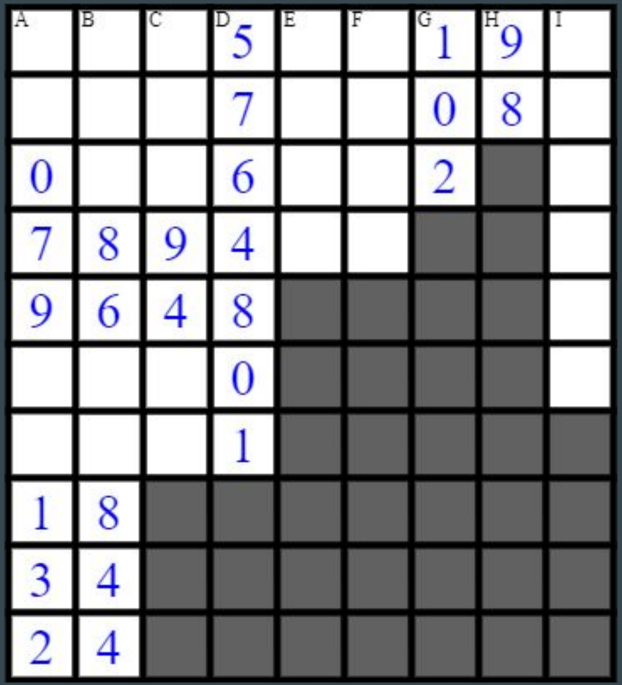


Across (Row 4): An even number with three consecutive digits in ascending order, the smallest of which is larger than this number's length (6)

Clues 3:

We may also recognize that the length 6 Across clue can only belong to row 4 (as no other row could have a length 6 number). Continuing, we know we need three consecutive digits in ascending order which are all larger than 6, which must be 789. The only place 789 can fit in this number is in the first 3 digits, owing to the 4 in position 4, so those digits may be placed in the grid as well.

Clues 3



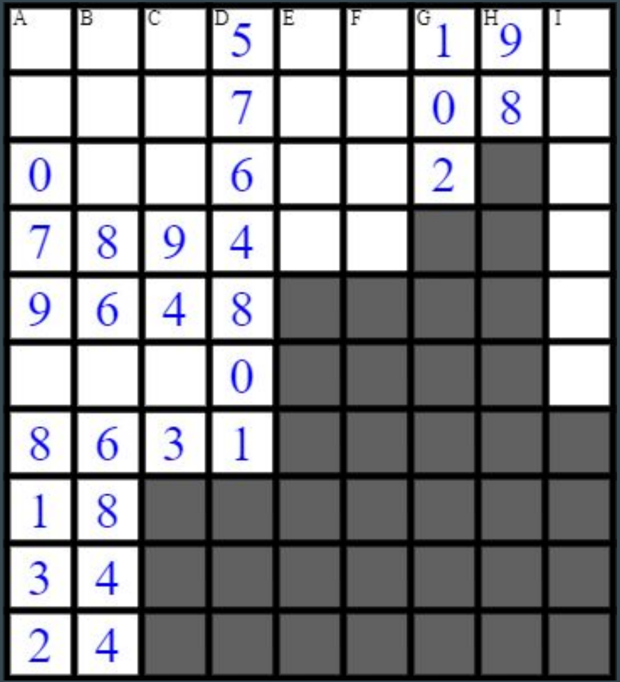
Across (Row 6): A number whose digits don't appear in either the number immediately above it, or the number immediately below it (4)
Across (Row 5): A number with only composite digits, with the first three digits forming a decreasing geometric sequence (4)
Across (Row 7): The only number in the grid greater than 100 with digits in descending order (4)

Clues 3:

We may now identify which length 4 Across clue applies to each of rows 5,6,7. First, we realize that rows 4 and 5 have an 8, so the above/below clue cannot be row 5. Similarly, rows 7 and 8 have a 1, and so the above/below clue must go in row 6. Then, 1 is not composite, so the composite digits clue must be row 5, and the descending order clue is row 7.

Then, we can resolve the composite digits clue; the only composite digits are 4,6,8,9, and since we've used 8 the geometric sequence must be 9,6,4 in descending order.

Clues 3

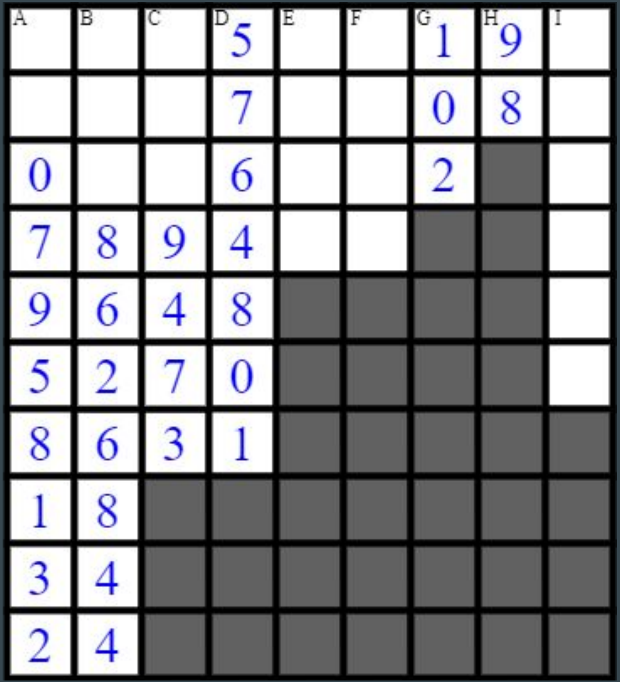


Row 7: The only number in the grid greater than 100 with digits in descending order (4)
Row 8: The sum of the digits of the number immediately above it in the grid (2)
B Down: The only number in this grid with repeated digits, with all 3 distinct odd digits placed above all 7 even digits

Clues 3:

We return to the sum of digits clue in row 8, now that we have identified the clue for row 7. The first digit of row 7 must be 8: making it 6 would have a maximum value of 6 + 5 + 4 + 1 = 16 which is less than 18, so 8 is forced. Then, B Down tells us that the second digit is even, and the only even digit that works is 6, because 8 + 4 + 3 + 1 = 16 < 18. Then 8 + 6 + 1 = 15, so the third digit is 3 to complete the sum.

Clues 3



Row 6: A number whose digits don't appear in either the number immediately above it, or the number immediately below it (4)
B Down: The only number in this grid with repeated digits, with all 3 distinct odd digits placed above all 7 even digits

Clues 3:

Now, from the above/below clue, we know that only the digits 0,2,5,7 can go in Row 6, as 4,6,8,9 are ruled out by their presence in row 5 and 1,3 are present in row 7. We can place these digits: B Down requires the only unplaced even digit 2 to go in r6c2, no repeats in A Down (B Down forbids it) means 5 must go in r6c1 and then 7 goes in r6c3.

Clues 3

A	B	C	D	E	F	G	H	I
			5			1	9	2
			7		5	0	8	
0			6			2		8
7	8	9	4					0
9	6	4	8					5
5	2	7	0					
8	6	3	1					
1	8							
3	4							
2	4							

Across (Row 2): The last four digits of this even number are present in reverse order in I Down, one of which is 5 (9)
Across (Row 1): This number ending in 2 has one pair of adjacent digits that are not coprime (9)

Clues 3:

We now use the last two Across clues: notice that row 2 cannot be the “coprime clue,” since 0 is not coprime to 8 and 8 is not coprime to the ending 2, which would be forced by the clue. So, we know that the “last four digits clue” is row 2 and the “coprime” clue is row 1 (by process of elimination), which places a 2 in r1c9.

The row 2 clue says that it is even and contains a 5 in the last 4 digits, so the 5 has to be the 4th to last digit (since the last digit must be even). We can also use the “reverse order” part of the clue to place 805 in I Down.

Clues 3

A	B	C	D	E	F	G	H	I
			5		3/7	1	9	2
			7		5	0	8	
0			6	4	3/7	2		8
7	8	9	4		2			0
9	6	4	8					5
5	2	7	0					
8	6	3	1					
1	8							
3	4							
2	4							

```
Row 4: An even number with three consecutive digits
in ascending order, the smallest of which is larger
than this number's length (6)
F Down: A number with only prime digits (4)
```

Clues 3:

From the clue for row 4, we know that r4c6 is an even digit, but we also need the digit to be prime, which means r4c6 is 2. The remaining prime digits in F Down are 3 and 7.

Clues 3

A	B	C	D	E	F	G	H	I
4/6			5		3/7	1	9	2
4/6			7	2	5	0	8	4/6
0			6	4	3/7	2		8
7	8	9	4		2			0
9	6	4	8					5
5	2	7	0					4/6
8	6	3	1					
1	8							
3	4							
2	4							

Row 2: The last four digits of this even number are present in reverse order in I Down, one of which is 5 (9)
Row 3: The only number in the grid with a leading zero, and all of its nonzero digits form a consecutive set (7)
E Down: The only number greater than 100 with only even digits (4)

Clues 3:

Now, we need to place an even digit in r3c5, and the remaining possibilities in the row are 4 and 8. However, because all nonzero digits need to form a consecutive set in row 3, 8 cannot go in row 3 because it is too far from the 2 already there. So r3c5 = 4.

The first two digits in A Down are either 4/6 (because of no repeats), and the last digit of row 2 is an even digit because row 2 is an even number. The only possible even digits remaining in I Down are 4 and 6 (I Down is an even number, so it must end in an even digit). However, this means there must be a 4 and 6 in r2c1,9, which means a 6 cannot appear in r2c5 in E Down. Therefore, the only possible digit for r2c5 is 2, since that’s the last even digit that hasn’t been eliminated.

Clues 3

A	B	C	D	E	F	G	H	I
4/6			5		3/7	1	9	2
4/6		1	7	2	5	0	8	4/6
0		5	6	4	3/7	2		8
7	8	9	4		2			0
9	6	4	8					5
5	2	7	0					4/6
8	6	3	1					
1	8							
3	4							
2	4							

Row 3: The only number in the grid with a leading zero, and all of its nonzero digits form a consecutive set (7)
C Down: Adjacent pairs of digits of this number are not consecutive (7)

Clues 3:

The only possibilities in r3c3 are 1/5, (it must be an odd digit, because we have 6 consecutive digits and we have already placed 3 even digits in the row). However, we can't put a 1 in r3c3, because we would then have no options for r2c3: the only number that isn't already in the same row or column is 6, but from the same reasoning as earlier 6 goes in either column 1 or column 9 in row 2, so it can't be in r2c3. Therefore, we can place a 5 in r3c3, and then we get a 1 in r2c3.

Clues 3

A 4	B 3/7	C 6/8	D 5	E 6/8	F 3/7	G 1	H 9	I 2
6		1	7	2	5	0	8	4
0		5	6	4	3/7	2		8
7	8	9	4		2			0
9	6	4	8					5
5	2	7	0					6
8	6	3	1					
1	8							
3	4							
2	4							

Row 3: The only number in the grid with a leading zero, and all of its nonzero digits form a consecutive set (7)
E Down: The only number greater than 100 with only even digits (4)

Clues 3:

We see that r1c5 can only be 6/8, since leading 0 is prohibited by the row 3 clue and 2,4 appear in the column, and digits of E Down can only be even. Similarly, r1c3 can only be 6/8, since all digits except 0,6,8 appear in row/column and leading 0s are prohibited again.

Therefore 6 and 8 must appear in r1c3,5, so r1c1 can't be 6 and must be 4, which lets us resolve all of the 4/6 clues by using no repeated digits. Also, this means the last digit to place in r1c2 is either 3 or 7.

Clues 3

A	B	C	D	E	F	G	H	I
4	7	8	5	6	3	1	9	2
6	9	1	7	2	5	0	8	4
0	3	5	6	4	7	2		8
7	8	9	4	0	2			0
9	6	4	8					5
5	2	7	0					6
8	6	3	1					
1	8							
3	4							
2	4							

Row 1: This number ending in 2 has one pair of adjacent digits that are not coprime (9)
Row 3: The only number in the grid with a leading zero, and all of its nonzero digits form a consecutive set (7)
Row 7: The only number in the grid greater than 100 with digits in descending order (4)

Clues 3:

F Down may either be 7532 or 3572. However, 7532 has digits in descending order, which is forbidden by the row 7 clue. Therefore it must be 3572.

Then, to complete the consecutive set of digits in row 3, we need a 3 in r3c2.

Now, we need a pair of non-coprime adjacent digits in row 1, which can only be the 6/3 pair at this point, which means we need a 6 in r1c5 and an 8 in r1c3.

We can place the last two digits via no repeated digits outside of B Down, and using the clue that the three odd digits in B Down are distinct, and we have completed the Puzzle Round!