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The Very Difficult Sudoku Book

1 Introduction

Getting a little bored with easy sudoku's? Or fed up with sudoku's that require you to guess the solution? Or sudoku's that have more than one solution? Or sudoku's of which the degree of difficulty is given in very inflated terms like excruciating or extreme? In this book we have none of that. We have proper difficult sudoku's with only one solution, that can be solved by direct reasoning. It is just that you need to know a number of techniques because they really are rather difficult. Just to make sure that you will not fail because you do not know all techniques involved, we explain first all techniques that have been used for the construction of these sudoku's. If you think that this is like giving away the solutions you are quite mistaken. Even when you know all these techniques the sudoku's are difficult. You will have to use many of them just to solve a single sudoku. Which ones and in which order is up to you. Each sudoku should keep you busy for at least an hour, probably much more, although it is of course possible that you are one of the very few who can do it faster. I am not one of those. It gives me a sense of achievement each time I solve one.

My first sudoku program I made when I had a book with a selection of sudoku's and already the first one I could not solve. Neither could I solve the second one. I wrote a small program that worked by trial and error and it found more than 200000 solutions for the first sudoku and also quite a few solutions for the second. All the sudoku's in that book had more than one solution. Yet, in the back they gave 'the solution' for each. I figure they must have used different or extra rules, but there was no explanation at all in the book. I considered the money I spent on it as wasted.

I got involved creating sudoku's when my little handheld sudoku game machine was accidentally dropped in the toilet and stopped functioning. It had a nearly limitless supply of games and I did not feel like the collections that I could buy in the shops were up to my standards. Hence one day I decided to make a computer program that would give me what I wanted. As is usual with computer projects, they run a little bit out of hand and take more time than you plan, but in this case at least the results were very satisfying. I programmed all techniques I knew and got a few more from the internet and used those together to determine whether a sudoku was solvable for someone with my techniques. There were a few more methods which I programmed, but I decided against using them as they came too close to trial and error methods which I do not really like. At the borderline is the method of coloring. It is OK as it goes, but it makes a mess of your pencilmarks, and hence it works best with special overlays. I decided to let you choose for yourself by making two sections: one that does not use coloring and one that may. The problem is that nearly all very difficult sudoku's use at one time or another in their solution the coloring method.

In our collections we use some methods that are considered controversial in another respect. We guarantee that our sudoku's have only a single solution and expect you to use that information. There are people who do not like this and in most published sudoku's this method is not used. There are arguments for and against. In this book the argument for won.

To obtain a nice collection of sudoku's I had the computer generate a collection of 600 million sudoku's. Most of those are very simple and do not need any of the methods that are presented here. But there are some that can become very complicated. The trick was to recognize those and to collect them. One of the most important selection criteria was the variety of techniques needed to solve the sudoku. Some may need 13 different techniques or more. It means that you have to be continuously on the lookout for everything. The

exceptions are the sudoku's that are used as examples for practicing in the sections that explain the methods. There as few techniques as possible are used, just to highlight what was explained.

For information we are much indebted to the people who have set up the internet sites sudokusnake.com and sudopedia.org. They explain a large variety of methods and give much side information. They have methods that are much more complicated than the ones used in this book. In some cases it becomes more academic and it may even be a whole science just to construct one or more sudoku's that need those techniques. As we did not write this book as a textbook for scientists nor for professional training, we have left those techniques out. We believe these sudoku's to be difficult enough already.

In all you should have many hours of sudoku pleasure.

2 Notation

We start with explaining our notation and nomenclature. We present all our sudoku's in something we call a board. This board has coordinates as in

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

When we refer to a location on the board we first mention the number of the row and then the letter of the column. The highlighted cell on this board is at location 3F which indicates row 3 column F:

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

The 3x3 squares on the board are referred to as blocks. They have numbers as in

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

To make things a bit easier we will usually refer to the blocks also by name as in center-right (block 6) etc.

The names of many of the techniques have been taken from the internet. A site that has helped us very much is sudokusnake.com. They have very good explanations of many techniques. More than we present here although we present here some that they do not have. Probably because they do not like those. Another site with much information about sudoku's is sudopedia.org.

3 Pencilmarks

When sudoku's are easy, it is often not necessary to make notes on the side at all. Things become different when the sudoku's go beyond the beginner level. We often like to make some notes about what we have derived till that moment. If it is not very complicated some simple notes in the margins will suffice, but when things become more and more complicated we like to make marks inside the empty cells about which numbers are still possible candidates for that cell. Then, when we make more and more progress towards a solution we can erase some of these possibilities. This is why it is best to make these marks in pencil and have a good eraser. Various people have various ways of making these 'pencilmarks' but for difficult sudoku's we prefer a method in which each number has its own position in the cell. Let us look at how this works. The position is

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

With the pencil marks it looks like

	A	B	C	D	E	F	G	H	I
1	² ₈	4	5	9	7	3	² ₈	6	1
2	7	9	^{1 2} ₈	² ₅	6	¹ ₄	3	² _{4 5 8}	⁴ ₈
3	^{1 2}	3	6	² ₅	8	¹ ₄	7	² _{4 5}	9
4	4	5	3	6	1	8	9	7	2
5	¹ ₈	2	7	3	5	9	¹ _{4 8}	¹ _{6 4 8}	⁴ _{8 6}
6	6	¹ ₈	9	4	2	7	5	¹ ₈	3
7	9	¹ ₇	^{1 2} ₄	8	3	5	^{1 2} _{4 6 4}	^{1 2} _{4 7}	⁴ _{6 7}
8	3	6	¹ ₈	7	4	2	¹ ₈	9	5
9	5	^{7 8}	⁴ ₈	1	9	6	⁴ ₈	3	⁴ _{7 8}

Of course, putting full pencil marks is a bit of work, specially when taking in consideration that when you make errors doing this the outcome may be fatal. But with the pencil marks it is easy to see what we can do.

	A	B	C	D	E	F	G	H	I
1	² ₈	4	5	9	7	3	² ₈	6	1
2	7	9	¹ ₈ ✕	² ₅	6	¹ ₄	3	² _{4 5 8}	⁴ ₈
3	^{1 2}	3	6	² ₅	8	¹ ₄	7	² _{4 5}	9
4	4	5	3	6	1	8	9	7	2
5	¹ ₈	2	7	3	5	9	¹ _{4 8}	¹ _{6 4 8}	⁴ _{8 6}
6	6	¹ ₈	9	4	2	7	5	¹ ₈	3
7	9	¹ ₇	^{1 2} ₄	8	3	5	^{1 2} _{4 6 4}	^{1 2} _{4 7}	⁴ _{6 7}
8	3	6	¹ ₈	7	4	2	¹ ₈	9	5
9	5	^{7 8}	⁴ ₈	1	9	6	⁴ ₈	3	⁴ _{7 8}

The two highlighted cells in block 7 (left bottom) contain the only possible two's in that block. Hence one of them must be a 2. This means that other two's in column C are not possible and we can scratch the potential two in cell 2C.

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

Next we see that the (highlighted) cells 2C and 8C only contain as possibilities the numbers 1 and 8. That means that in that column one cell must have the 1 and the other the 8. We just do not know which one gets what number. But it also means that in the C column no other position can have a 1 or an 8. Hence we can scratch the potential 1 in cell 7C and the potential 8 in cell 9C. Now it becomes a little more complicated and we really need the pencilmarks.

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

If we look at the cells 2C, 2F and 2I we see that their possibilities are (1,8), (1,4) and (4,8) respectively. This means that for three positions in row 2 we have only three different numbers. Hence the numbers (1,4,8) have to occur in those three positions and nowhere else in that row. Therefore we can scratch the potential 4 and 8 in cell 2H.

	A	B	C	D	E	F	G	H	I
1	² ₈	4	5	9	7	3	² ₈	6	1
2	7	9	¹ ₈	² ₅	6	¹ ₄	3	² ₅	⁴ ₈
3	^{1 2}	3	6	² ₅	8	¹ ₄	7	² _{4 5}	9
4	4	5	3	6	1	8	9	7	2
5	¹ ₈	2	7	3	5	9	¹ ₄ ⁶ ₈	¹ ₄ ⁸	⁴ ₆ ⁶ ₈
6	6	¹ ₈	9	4	2	7	5	¹ ₈	3
7	9	¹ ₇	² ₄	8	3	5	^{1 2} _{4 6} ^{1 2} ₄	⁴ ₇ ⁶ ₈	
8	3	6	¹ ₈	7	4	2	¹ ₈	9	5
9	5	^{7 8}	² ₄	1	9	6	⁴ ₈	3	⁴ _{7 8}

Next we notice that the cells 5H and 6H contain the only possible 8's in column H and hence one of the two must contain the number 8. As a consequence we can scratch the other potential eights in block 6 (right center). This is in the cells 5G and 5I. And now the last step before things become simple again:

	A	B	C	D	E	F	G	H	I
1	² ₈	4	5	9	7	3	² ₈	6	1
2	7	9	¹ ₈	^{2 5}	6	¹ ₄	3	^{2 5}	⁴ ₈
3	^{1 2}	3	6	^{2 5}	8	¹ ₄	7	⁴ 2 5	9
4	4	5	3	6	1	8	9	7	2
5	¹ ₈	2	7	3	5	9	¹ ₄ ⁶ ₈	¹ ₄ ⁸	⁴ ₆ ⁶ ₈
6	6	¹ ₈	9	4	2	7	5	¹ ₈	3
7	9	¹ ₇	² ₄	8	3	5	^{1 2} _{4 6} ^{1 2} ₄	⁴ ₇ ⁶ ₈	
8	3	6	¹ ₈	7	4	2	¹ ₈	9	5
9	5	^{7 8}	² ₄	1	9	6	⁴ ₈	3	⁴ _{7 8}

We look at the (highlighted) cells 2D, 3D, 2H, 3H. The step we apply now takes into account that there is only one solution for the sudoku. This is a given fact for all sudoku's in this book. We notice that all four cells have as potential number the numbers 2 and 5 and cell 3H can also take the value 4. The observation is now that if cell 3H takes the value 2 or 5 the other cells are forced into the values 2 or 5 for 2D and 5 or 2 for 3D and 2H. But either choice would leave a proper position that does not affect anything else on the board. Hence the solution is not unique if we select either the 2 or the 5 for cell 3H. But we know that there is only one solution. Therefore the solution for cell 3H must be the 4. We can scratch the possibilities 2 and 5 for this cell. We have reached now the point that we can actually determine that we have to put the number 4 in cell 3H. After this the solution of the sudoku is straight forward.

We see here that when the sudoku's become complicated the main action takes place with the pencilmarks. Hence they are indispensable for the complicated sudoku's in the

main section of the book. This is why the sudoku's are printed rather large. It allows for more than enough space for the pencilmarks.

4 The methods

Below we will present all methods that have been used at one stage or another in composing the sudoku's in this book. We have ordered them more or less by difficulty, starting with the easy ones. For the classification of the difficulty we use two systems. One is the classification used on the internet site sudokusnake.com but adapted to our needs as they do not use the method of uniqueness and we do. Also we think that sets of 4 or 5 elements are considerably harder to spot than sets of 2 elements. The main problem we have with their scoring though is the fact that if one uses the same method 5 times its point value gets added 5 times to the score while we believe that the sudoku does not become that much harder when you keep using the same method. Hence our score, called difficulty, gives a certain point value when a method is used first and a much smaller point value for each further use. The difference is very much noticeable when you look at the most difficult sudoku's. In the case of the sudoku scoring one sees a relatively small variety of methods, in which the more complicated one is used many times, while with the difficulty method one sees the application of as many different methods as possible. We have seen sudoku's with 13 or more different methods (counting sets of 2, sets of 3 etc as different methods). We prefer the variety in the methods as it seems more adventurous. Only for the examples of the methods we have made an exception, because there the didactic aspect is more important. There we have gone to some extremes, selecting very special sudoku's from a sample of hundreds of million sudoku's.

Some of the methods are defined differently on different sites of the internet. This leaves us to interpret things our way. This is particularly important with the coloring method. This can be made arbitrarily complicated and the result is that depending on the definition one may come very close to trial and error. Hence in the first selection of sudoku's we have left out the coloring method, while in the second selection we have included it in a relatively mild form.

Another method for which the internet sites have different definitions is the swordfish and the jellyfish. The original definition was a cyclic one with each row allowing twice the candidate number. Later a much more general definition was discovered. It is this definition that we use.

If one looks at sites like sudokusnake.com one sees many much more complicated methods defined. We have not included those (yet?). As is, the sudoku's are already difficult enough and should take at least an hour to solve, possibly much more. Also the more difficult techniques are much rarer and hence it is much more difficult to find good examples of them. In addition some of them seem to be solvable when one stretches the definition of coloring a bit. It becomes a matter of what one considers allowable and what not. Then there is the definition of forcing chains. We have seen two completely different definitions. At the moment we have left out this method completely. It can be very powerful though, but at the same time it is very complicated and may be crossing the borderline and be marked as a trial and error method.

With the methods below we can solve about 75 % of randomly generated sudoku's (once they fulfill the requirement that they have only a single solution). Trial and error techniques will solve all of course but that technique we do not want to apply. Hence our sudoku's are selected from those 75%. Of those most are very simple and require none of the methods

presented below (60% or more). Hence our strategy is to generate very many sudoku's and then select the few that have an interesting profile when we study which methods they need for their solution.

It is of course not excluded that if you know fancier methods than the ones that follow, you can solve some of the sudoku's much quicker. Good for you. Knowledge is power.

5 Pointing

The first technique one should learn is the pointing technique. In a given block all occurrences of possibilities for a given number are either in the same row or the same column. See for instance the example:

	A	B	C	D	E	F	G	H	I
1	¹ 9	4	5	¹ 8 9	¹ 6 8 9	3	2	⁶ 9	7
2	² 9	7	⁶ 8	² 8 9	⁴ 6 8 9	² 8	1	5	3
3	^{1 2} 9	¹ X	3	^{1 2} X 9	7	5	^{4 6} 8 9	^{4 6} 9	⁶ 8 9
4	3	2	9	4	5	6	^{7 8} 7	¹ 8	¹ 8
5	4	¹ 8	¹ 8	3	2	7	⁶ 8 9	⁶ 9	5
6	6	5	7	¹ 8 9	¹ 8 9	¹ 8	3	^{1 2} 4 9	^{1 2} 4 8 9
7	8	9	¹ 4 6	7	¹ 4 6	^{1 2} 4	5	3	^{1 2} 4 6
8	5	3	¹ 4 6	^{1 2} 6 8	¹ 4 6 8	9	^{4 6} 7	^{1 2} 4 6	^{1 2} 4 6
9	7	¹ 6	2	5	3	¹ 4	⁴ 6 9	8	¹ 4 6 9

The possible positions for the number 8 (and the number 4) for block 3 (right top) are all in row 3. Because there must be a number 8 in this block it will be in row 3. Hence in the rest of row 3 there can be no number 8 and we can scratch those possibilities. This is done in 3A, 3B and 3D. The same holds of course for columns as in

	A	B	C	D	E	F	G	H	I
1	5	⁴ 8	9	⁴ 6	7	3	² X	⁶ 8	1
2	⁴ 7 8	³ 4 7 8	³ 4 8	¹ 4 6 5 6	³ 4 5 6	2	⁵ 7 X	⁶ 8	9
3	³ 7	^{1 2} 7	6	¹ 9	⁵ 9	8	^{2 3} 5 7	4	³ 7
4	⁴ 7 8	5	1	^{2 3} 4 7	² 4 8	6	³ 7 8	9	³ 7
5	9	⁴ 7 8	⁶ 4 8	³ 4 7	³ 4 8	1	³ 7 8	2	5
6	³ 7 8	⁶ 7 8	2	³ 7 9	^{8 9} 8 9	5	³ 7 8	1	4
7	2	9	5	8	1	7	4	3	6
8	6	⁴ 8	⁴ 8	5	3	9	1	7	2
9	1	3	7	² 6	² 6	4	9	5	8

The number 8 in block 6 (right middle) occurs only in column G. Hence we can scratch the possibilities for the number 8 in the other blocks in this column.

Here is an example to practice the pointing technique:

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

6 Claiming

Claiming is very much related to pointing, but usually a little harder to see. If all occurrences of possibilities for a given number in a certain row or column are inside the same block, we may eliminate the other potential occurrences of this number inside that block. As in the example:

	A	B	C	D	E	F	G	H	I
1	<div>2 5 8</div>	6	<div>X 2 3 4 5 8</div>	<div>1 2 5</div>	<div>2 3 4 5</div>	9	<div>3 5 8</div>	<div>1 3 5 8</div>	7
2	<div>2 5</div>	<div>1 3 4 5</div>	<div>1 2 3 4 5</div>	7	<div>2 3 4 5</div>	8	<div>3 5</div>	9	6
3	9	7	<div>X 3 5 8</div>	<div>1 5</div>	<div>5 3</div>	6	2	<div>1 3 5 8</div>	4
4	1	4	<div>5 6 8</div>	9	<div>5 7 8</div>	3	<div>5 6 7 8</div>	<div>5 7 8</div>	2
5	<div>5 6 8</div>	2	<div>5 6 8</div>	<div>5 8</div>	<div>5 7 8</div>	1	<div>4 5 6 7 8</div>	<div>4 5 3 7 8</div>	9
6	3	9	7	4	6	2	<div>5 8</div>	<div>5 8</div>	1
7	4	5	9	<div>2 8</div>	<div>2 8</div>	7	1	6	3
8	<div>2 6 7</div>	8	<div>2 6</div>	3	1	4	9	<div>2 7</div>	5
9	<div>2 7</div>	<div>1 3</div>	<div>1 2 3</div>	6	9	5	<div>4 7</div>	<div>4 7</div>	8

In row 2 the only possible occurrences of the number 1 are in block 1 (left top). Hence we can eliminate the possibilities for number 1 in the positions 1C and 3C. Again this works also with columns:

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

The number 5 in column E is only possible inside block 8 (middle bottom). Hence we can scratch the possibilities for number 5 in the positions 8D, 8F, 9F.

Next an example to practice the claiming technique.

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

7 Sets

The concept of sets is very fundamental and it is almost impossible to think of sudoku's that are not at the very beginners level without sets. The idea is rather simple:

	A	B	C	D	E	F	G	H	I
1	2	1	6	9	3	8	7	4	5
2	9	7	4	^{1 2} ₅	² ₅	^{1 2}	8	6	3
3	5	³ ₈	³ ₈	7	4	6	^{1 2}	9	^{1 2}
4	7	9	5	^{1 2}	6	3	^{1 2}	8	4
5	³ ₈	^{2 3} ₈	1	4	² _{5 8}	9	6	⁵ ₃	7
6	4	6	^{2 3} ₈	^{1 2} _{5 8}	7	^{1 2}	9	⁵ ₃	^{1 2}
7	6	5	^{2 3} ₈	^{2 3} ₈	² ₈	7	4	1	9
8	1	4	7	6	9	5	3	2	8
9	³ ₈	^{2 3} ₈	9	^{2 3} ₈	1	4	5	7	6

Consider the cells 6F and 6I. Both have the same two possibilities: the numbers 1 and 2. This means that one cell must get number 1 and the other number 2. It is just not determined yet which one will obtain which value. But it means that those two positions provide the numbers 1 and 2 in row 6, and hence other positions in that row cannot have the numbers 1 or 2. This means that we can scratch the potential 1 and 2's in the positions 6C and 6D. This holds of course also for columns:

	A	B	C	D	E	F	G	H	I
1	^{2 3} _{4 8 9}	^{2 3} _{6 8 9}	^{2 3} _{4 6 8 9}	1	^{2 3} ₉	7	² ₉	^{4 6}	5
2	^{2 3} _{4 5 7}	^{2 3} _{6 7 9}	^{2 3} _{4 6 7 9}	^{2 3} _{5 9}	^{2 3} ₉	8	² ₉	^{4 6}	1
3	² _{5 9}	² ₉	1	6	4	² _{5 9}	3	^{7 8}	^{7 8}
4	6	^{1 2} _{8 9}	² _{8 9}	7	5	^{1 2} ₉	¹ ₈	3	4
5	⁴ ₇	5	⁴ ₇	8	¹ ₆	¹ ₆	¹ ₆	9	2
6	² _{7 8 9}	^{1 2} _{7 8 9}	² _{7 8 9}	4	^{1 2} _{6 9}	3	¹ _{7 8}	^{5 6} _{7 8}	¹ _{7 8}
7	³ _{8 9}	³ _{8 9}	³ _{8 9}	⁵ ₉	7	¹ _{4 5 9}	¹ _{4 5 8}	2	6
8	1	² _{7 8 9}	5	² ₉	² _{6 8 9}	² _{4 6 7 8 9}	⁴ _{7 8}	^{7 8}	3
9	^{2 3} _{7 8}	4	^{2 3} _{7 8}	^{2 3} ₅	^{2 3} _{1 2 3 5 6 8}	^{1 2} _{5 6}	¹ _{5 7 8}	¹ _{5 7 8}	9

and for blocks:

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

The concept of sets holds also for bigger groups of numbers. When we look at the following situation we see that the three colored cells contain the only occurrences of the three numbers 2, 7 and 9 in row 3. That means that one of the three must be 2, another 7 and the third must be 9. We just do not know which one will have what number. But it means that other cells in row 3 cannot have the numbers 2, 7 or 9 and hence we can scratch the possibilities 2 and 7 in cell 3E.

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

Of course sets of three are a bit harder to spot than sets of two. And of course we can generalize this to sets of four (four cells that have the only occurrences of four numbers in a given row, column or block) and even five or more. For reasons we explain in the section on hidden sets we stop at five when testing for sets. Some examples:

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

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

And now some sudoku's to practice sets:

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

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

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

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

The last one may be a bit hard to find.

8 Hidden sets

The concept of hidden sets is complementary to that of regular sets. Consider the following situation:

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

In row 3 the two colored cells 3B and 3E are the only two cells that could possibly obtain the numbers 7 or 8. Hence they must obtain those values and the other possibilities in those two cells can be scratched after which we see that these two cells form a set of two. One could obtain the same result if one looks at the other four cells in this row that do not have a fixed value yet. They form a set of four with the values 1, 2, 4 and 5. This mechanism is always present: if there is a hidden set the complementary cells form a set. We consider that it is easier to spot a hidden set of two than a set of four and hence give priority to looking for the shorter hidden set.

Of course one can also have hidden sets of three:

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

Again we can scratch the spectator numbers. Can you see that after this scratching there is another hidden set of three?

Of course hidden sets are harder to see than regular sets. Hence we consider the following hierarchy, going from easy to difficult: Set of two, set of three, hidden set of two, hidden set of three, set of four, set of five. Together they cover all possibilities for sets. Assume there would be a hidden set of four. Then the other not-yet-fixed cells in that row/column/block would form a set of at most five. And if there is a set of six, the other cells in that row/column/block would form a hidden set of at most three.

Finally some practice material:

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

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

9 The X-wings configuration

Imagine the following situation:

	A	B	C	D	E	F	G	H	I
1	9	6	4	^{2 3} _{5 8}	^{2 3}	^{2 3} _{5 8}	1	7	^{5 3}
2	5	7	^{2 3}	1	6	4	^{8 9}	^{2 3}	^{8 9}
3	^{2 3}	8	1	7	9	^{5 3}	^{2 5}	6	4
4	7	^{2 3}	8	^{2 3} _{6 9}	^{1 2 3}	^{1 6}	4	^{2 3} _{5 9}	^{2 3}
5	1	4	9	^{2 3}	5	7	6	8	^{2 3}
6	^{2 3}	5	6	4	8	^{2 3} ₉	^{2 9}	1	7
7	6	9	7	^{2 5} ₈	4	^{2 5} ₈	3	^{2 5}	1
8	4	^{2 3}	5	^{3 6} ₇	^{1 3}	^{1 6}	^{2 7 8}	9	^{2 8}
9	8	1	^{2 3}	^{2 5} _{9 7}	³	^{2 5} _{9 7}	⁵	4	6

We have two rows in which the 3 is allowed only in two positions. These two positions happen to be in the same columns A and F. What can we say about them: If in the third row the 3 is in the A column, in the sixth row the 3 must be in the F column and if the 3 in the third row is in the F column, the 3 in the sixth row must be in the A column. Either way

we end up with a 3 in both the A and the F columns. This means that other possibilities of the number 3 in the A and F columns can be eliminated as is the case with the crossed out 3 in position 1F. This configuration is called X-wings.

The same can be done of course when we have two columns each with two possibilities for a number and these possibilities share the same two rows. Then extra possibilities on those two rows can be eliminated.

It becomes more confusing when we have two blocks each with two possibilities for a number and they share either the same two rows or the same two columns. Again extra possibilities on those two rows or columns can be eliminated as shown:

	A	B	C	D	E	F	G	H	I
1	4	⁷ _{6 9}	2	^{5 6} ₈	^{5 6} ₈	3	¹ ₉	¹ _{6 7 8 9}	
2	¹ ₆	¹ ₆	8	9	2	7	3	5	4
3	5	⁷ _{6 9}	3	^{4 6} ₈	^{4 6} ₈	1	² ₉	² _{6 7 8 9}	
4	⁷ ₉	8	^{4 5} _{7 9}	3	1	2	6	⁴ _{7 9}	⁵ _{7 9}
5	⁷ ₉	^{4 5}	1	⁴ ₈ ✕	⁴ _{8 9} ✕	6	² _{4 5 9}	² _{4 7 9}	3
6	3	2	6	7	^{4 5} ₉	^{4 5} ₉	8	⁴ ₉	1
7	^{1 2} _{6 9}	3	^{4 5} ₉	^{1 2} _{4 5 6}	7	^{4 5} ₉	^{1 2} _{4 5 9}	8	² _{5 9}
8	8	¹ _{4 5 6}	^{4 5} ₉	^{1 2} _{4 5 6}	^{4 5} _{6 9}	^{4 5} ₉	7	3	² _{5 9}
9	^{1 2} _{4 5 7 9}	¹ _{4 5}	^{4 5} _{7 9}	^{1 2} _{4 5}	3	8	^{1 2} _{4 5 9}	^{1 2} _{4 9}	6

The 5 here occurs in the two blocks 4 and 6 only twice in the rows 4 and 5. Hence we can eliminate the possible 5's in block 5 in the rows 4 and 5. What we may also notice however is that the technique of claiming could have done the job as well: the only occurrences in row 6 of possible 5's are in block 5 and hence other occurrences of possible 5's in that block can be eliminated. Because claiming is considered an easier technique than X-wings, in practice we do not need this variety of the X-wings. On the other hand, as you see these eliminations first by the X-wings method, there is nothing wrong with it.

Something to practice with:

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

10 Uniqueness

This is a controversial technique. It is however not very difficult to apply.

A good sudoku should have only a single solution. Very often the maker tells us already that the sudoku has one and only one solution. In that case we can of course use this information. Why throw it away? There are however people who do not want to use this information because at the same time that they solve the sudoku, they want to prove that there is only one solution. In our eyes this only makes sense if the collection includes also some sudoku's that have more than one solution so that these people are doing something meaningful. This we do not like, and hence we guarantee that all our sudoku's have only one solution and at times you will need this information to solve the sudoku. Consider it part of the rules. Of course we need an example.

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

Let us have a good look at the four colored cells 4C, 4D, 6C, 6D. Three of them have as only possibilities the 4 and the 8 left and the one in 6D has the 2, the 4 and the 8 left. Assume now that the cell in 6D gets a 4. in that case 4D and 6C become an 8 and 4C becomes also a 4. But if this is the solution then also the configuration in which 4D and 6C are a 4 and 4C and 6D are an 8 is a solution. There is no way to fix which of the two is preferred. This would mean that there is more than one solution. But we were told that this is not the case. The only way out is that 6D can neither be a 4 nor an 8. Hence it must be the 2.

In general: when we have a square pattern with three cells the possibilities a and b and the fourth cell the possibilities a,b and others, and the cells are divided over two blocks, we can scratch the possibilities a and b in the fourth cell.

There are very many variations on this principle of uniqueness. Currently we have used only five varieties of which you already saw the first which we call uniqueness type 1. We will illustrate the others.

	A	B	C	D	E	F	G	H	I
1	8	3	6	4	[×]	5	9	2	¹
2	7	4	5	^{1 6 9}	^{1 6 9}	2	^{6 8}	3	[×]
3	9	1	2	^{3 6}	8	^{3 6}	4	^{5 6}	⁵
4	6	8	7	5	2	4	1	9	3
5	4	5	3	^{6 9}	^{6 9}	1	7	8	2
6	1	2	9	^{3 7}	^{3 7}	8	5	4	6
7	2	6	4	8	5	7	3	1	9
8	^{5 3}	7	8	^{1 3 6}	^{1 3 6}	9	2	^{5 6}	4
9	^{5 3}	9	1	2	4	^{3 6}	^{6 8}	7	^{5 8}

This variety we call uniqueness 1a. We see again four cells of interest but now the two in one block have as possibilities 6 and 9 and the other two have an extra 1 as possibility. We can say now that not both those cells 2D and 2E can be either a 6 or a 9 because then there would not be a single solution. Hence one of those cells, we do not know yet which one,

must be a 1. In either case there will be a 1 on row 2. Hence other possible 1's on that row can be eliminated as is the case with the 1 in 2I. But also other 1's in the same block can be eliminated. Hence also the 1 in 1E may be crossed out.

The next type we call uniqueness 1b. It looks a bit like type 1a but as you can see it is a little bit different in that the two cells with three possibilities are in different blocks:

	A	B	C	D	E	F	G	H	I
1	4	3	_{7 8}	6	9	1	5	² _{7 X}	² _{7 8}
2	6	5	2	8	7	4	3	9	1
3	9	1	_{7 8}	3	2	5	_{7 6}	_{7 8}	4
4	_{7 8}	4	3	1	5	2	_{7 6}	_{7 8}	9
5	² ₈	9	1	7	4	6	² ₈	5	3
6	² ₇	6	5	9	8	3	1	4	² ₇
7	5	_{7 8}	6	2	1	9	4	3	_{7 8}
8	1	² ₇	4	5	3	8	9	² ₇	6
9	3	² ₈	9	4	6	7	² ₈	1	5

Now we can only eliminate the 8's in column H, not in any of the participating blocks. Yet it is something and at times it is more than enough to solve the sudoku.

The next type we call type 2. It involves a longer chain:

	A	B	C	D	E	F	G	H	I
1	⁵ ₇	1	6	8	2	9	3	⁵ ₇	4
2	4	9	3	1	5	7	8	6	2
3	⁵ _{7 8}	² ₇	² _{7 8}	4	3	6	9	1	⁵ ₇
4	9	^X ₇	² ₇	6	⁴ ₈	1	5	² ₈	3
5	3	8	5	9	7	2	6	4	1
6	6	² ₄	1	5	⁴ ₈	3	7	² ₈	9
7	1	6	4	7	9	5	2	3	8
8	2	⁵ ₇	9	3	1	8	4	⁵ ₇	6
9	⁵ _{7 8}	3	_{7 8}	2	6	4	1	9	⁵ ₇

This is like type 1 but it has two more elements. Let us have a look at cell 4B. If we put a 2 there, cell 6B gets a 4. This will determine the numbers in the cells 6E, 4E, 4H and 6H.

Let us classify this solution as $\begin{smallmatrix} 2 & 4 & 6 \\ 4 & 6 & 2 \end{smallmatrix}$ But then also $\begin{smallmatrix} 4 & 6 & 2 \\ 2 & 4 & 6 \end{smallmatrix}$ must be a solution. The only way out is to scratch the possible 2 and 4 in cell 4B.

These chains can also 'go around the corner':

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

This one we call type 2A.

It should be clear now that one might make many patterns like this. For instance in the 2A pattern, one could have the extra possibilities in the block that is in the middle of the pattern (block 7). One can use a crossbreed of type 2 or 2A with the types 1a or type 1b. One can make the chains longer. And there are even other possibilities. Currently we have not included those, because there is no good indication where to stop. We may include some more in the future.

Finally for practicing:

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

It should be noticed that this sudoku involves some simpler techniques as well. But it is unique among hundreds of millions of sudoku's we have generated by computer.

11 Almost Linked Sets

The almost linked set is a rather powerful technique which does not require very much. The best is if we look at the example first:

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

We see the main cell at 9I with two possibilities 1 and 3. The second cell has to be outside the same block not be in the same row or column and have at least the same two possibilities. The row or the column of the second cell has to intersect the block of the main cell. The final requirement is that in the row of the second cell there is no other occurrence of either 1 or 3 outside the block of the main cell. You can see that this is the case in row 7. Now let us look what happens. The main cell is either a 1 or a 3. Assume it is a 1. In that case there can be no other 1 in the block and the only possible 1 in row 7 left is in our second cell. Something similar holds for if we choose the 3 in the main cell. Hence we see that the second cell can only have the values 1 or 3. Next we see that if the main cell is 1, the second cell is 1 and hence the 3 in row 7 must be inside the block of the main cell. That means that neither the 1, nor the 3 can occur in other cells in the block. Similarly, if we start with the 3 the other cells in the block can be neither a 1 or a 3. Hence the locations inside the block of the main cell that are neither the main cell nor in the same row as the second cell can have neither a 1 nor a 3. Hence we scratch those numbers in the cell 9G.

The next example has again the main cell in a block (cell 7I in block 9) and this time it is the column that is relevant for the second cell (column G). We see that this time some more possibilities are erased inside block 9.

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

It is also possible to exchange the role of blocks and rows/columns. In the next example which is following directly the situation of the previous example we have the main cell at 3A in column A and the second cell in block 4 (left center) at 4C. Now we see that the only other occurrences of the numbers 1 and 6 in block 4 are in column A and hence all other occurrences of 1 and 6 in column A can be erased.

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

The last example shows that also when the main cell is in a row or a column (the cell 7A) and the second cell is in a block (block 9) we can eliminate extra possibilities inside the second cell.

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

All together this is a powerful technique that we found on sudopedia.org.
Now for practicing:

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

12 The swordfish configuration and the Jellyfish

Whereas the X-wings configuration involves two rows/columns with two possibilities that together occupy two columns/rows, the swordfish involves three rows/columns each with at

most three possibilities that together occupy three columns/rows. Let us have a look at this as a picture is worth a thousand words:

	A	B	C	D	E	F	G	H	I
1	7	² _{5 6}	² _{5 8}	1	4	⁶ ₉	³ _{5 6 8 9}	⁶ _{8 9}	^{2 3} _{6 9}
2	¹ _{5 6}	3	¹ ₅	2	8	⁶ _{7 9}	^{5 6} _{7 9}	⁶ _{7 9}	4
3	4	9	² ₈	5	3	⁶ ₇	1	⁶ _{7 8}	² ₆
4	⁶ _{7 9}	⁴ _{7 6}	3	⁴ _{7 9}	2	8	⁴ _{7 6 9}	1	5
5	² _{8 9}	1	² _{7 8 9}	⁴ _{7 9}	6	5	⁴ _{7 8 9}	3	⁷ ₉
6	^{5 6} _{8 9}	^{4 5 6} _{7 8 9}	⁵ _{7 8 9}	3	⁷ ₉	1	2	^{4 6} _{7 8 9}	⁶ _{7 9}
7	3	^{7 8}	6	^{7 8 9}	5	4	^{7 9}	2	1
8	¹ _{5 8 9}	⁵ _{7 8}	¹ _{7 8 9}	⁶ _{7 8 9}	⁷ ₉	2	^{4 6} _{7 9}	^{4 6} _{7 9}	³ _{6 9}
9	² ₉	² ₇	4	⁶ _{7 9}	1	3	⁶ _{7 9}	5	8

In the rows 4, 7 and 9 the possibility of a 7 occurs exactly three times and in all cases in the columns B, D and G. Clearly the number 7 has to occur in all three rows and since the numbers cannot share a column these three columns all get a number 7 originating in one of those three rows. That means that other potential 7's in those columns can be scratched. We notice that this eliminates many potential 7's (to be precise: seven). This is a very sympathetic property of swordfish configurations when they occur early in the puzzle: they cause great progress.

Originally the name swordfish configuration was given to three rows/columns with each two possibilities connected (sharing columns/rows) in a cyclic way as in the following example:

	A	B	C	D	E	F	G	H	I
1	7	9	4	¹ ₈	^{2 3}	6	^{1 3}	5	^{1 2 3} ₈
2	5	^{2 3}	¹ ₈	¹ ₈	7	4	⁶ ₉	³ ₉	^{2 3} ₆
3	¹ ₈	^{2 3}	6	5	^{2 3} ₉	³ _{9 7}	^{1 4} _{7 8}	^{1 4} _{7 8}	^{1 4} _{7 8}
4	¹ ₄	¹ _{4 6}	2	3	8	5	¹ _{6 4 7 9}	¹ _{4 6}	¹ ₆
5	3	¹ ₆	5	^{7 9}	4	^{7 9}	8	2	¹ ₆
6	⁴ _{8 9}	⁴ _{7 8}	^{7 8}	2	6	1	5	³ _{4 7 9}	³ _{4 7}
7	¹ ₄	¹ _{4 7}	3	6	5	8	2	¹ _{4 7}	9
8	6	⁴ _{7 8}	^{7 8 9}	^{7 9}	1	2	⁴ ₇	^{4 8}	5
9	2	5	¹ _{7 8 9}	4	³ _{9 7}	³ _{9 7}	¹ ₇	6	¹ _{7 8}

It was however recognized soon that this could be generalized. The first example is actually reasonably rare in realistic sudoku's. One usually finds one or more possibilities missing as in the cyclic case or the next two examples:

	A	B	C	D	E	F	G	H	I
1	^{2 3} ₆	4	⁶ _{8 9}	³ _{6 7 9}	1	² _{5 6}	³ ₅	³ _{7 8 9}	⁵ _{7 9}
2	5	7	1	8	⁴ ₉	³ ₄	6	2	⁴ ₉
3	^{2 3} ₆	² ₉	⁶ _{8 9}	³ _{6 7 9}	² _{4 5 7}	² _{4 5 6}	1	³ _{7 8 9}	^{4 5} _{7 9}
4	8	1	⁴ ₆	³ _{6 7}	² _{4 7}	9	⁵ ₇	³ ₇	² _{5 7}
5	² ₇	³ ₆	5	¹ ₇	⁶ ₈	^{1 2} ₇	9	4	^{1 2} ₇
6	² ₇	² ₉	⁴ ₉	5	^{2 3} _{4 7}	^{1 2 3} _{4 7}	8	6	^{1 2 3} ₇
7	4	6	3	¹ _{7 9}	¹ _{7 9}	¹ ₇	2	5	8
8	1	5	7	2	6	8	4	³ ₉	⁵ ₉
9	9	8	2	4	³ ₅	³ ₅	7	1	6

	A	B	C	D	E	F	G	H	I
1	8	2	4	3	¹ ₅	¹ _{5 9}	7	¹ _{5 9}	¹ _{5 9}
2	6	7	5	^{1 2} ₄	8	9	² ₄	^{1 2} ₄	^{1 2} ₄
3	1	9	3	² ₅	4	7	² _{5 8}	6	² _{5 8}
4	⁵ ₉	3	6	¹ _{5 9}	7	^{1 2} _{4 5}	² _{4 8}	² _{4 8 9}	² _{4 5 8}
5	⁵ ₉	1	2	8	3	⁴ ₅	6	⁴ ₉	7
6	7	4	8	6	⁵ ₉	² ₅	² _{5 9}	1	3
7	4	⁵ ₈	1	7	² _{5 9}	6	² _{8 9}	3	² _{8 9}
8	3	6	9	4	^{1 2} ₉	8	7	5	^{1 2} ₉
9	2	⁵ ₈	7	⁵ ₉	¹ ₅	3	¹ _{4 8}	⁴ _{8 9}	6

One has to learn how to hunt for the swordfish configuration. This requires some practice. Here is one to try out:

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

We generalized the X-wings configuration to the 3x3 swordfish. Of course we can continue and go to a 4x4 configuration. This is called the **jellyfish**. We mentioned already that a complete swordfish is a bit rare. This is even more so for a complete jellyfish. Actually the jellyfish itself is reasonably rare among randomly generated sudoku's, but because its degree of difficulty is much higher than the swordfish it becomes rather frequent among the most difficult sudoku's. Here is an example:

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

Once you have understood the swordfish the jellyfish should not cause any problems.

And again one sudoku for practicing. This one involves a few other of the simpler techniques as well.

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

The 5x5 generalization is called the squirmbag. We have not used it. There is a good reason for this. If one would have five rows that form a squirmbag, there will be two, three or four columns that together form an X-wings configuration, a swordfish or a jellyfish. There is a certain complementarity. Hence the squirmbag is not really needed.

13 The finned X-wings configuration

As the name says, the finned X-wings configuration is an X-wings configuration with a little extra. This can be explained best with a diagram:

	A	B	C	D	E	F	G	H	I
1	1	6	⁴ ₉	³ _{4 5}	³ _{4 9}	2	8	7	⁵ ₃
2	7	5	⁴ ₃	1	8	6	⁴ ₃	2	9
3	2	8	³ _{4 9}	7	³ _{4 9}	^{4 5} ₃	^{4 5} ₃	1	6
4	8	9	1	6	7	³ _×	2	4	⁵ ₃
5	3	4	5	8	2	9	1	6	7
6	6	7	2	^{4 5} ₃	1	^{4 5} ₃	⁵ ₃	9	8
7	4	2	8	9	5	7	6	3	1
8	5	3	7	2	6	1	9	8	4
9	9	1	6	³ ₄	³ ₄	8	7	5	2

We see that one of the two rows that define the X-wings has actually three possible 5's in it. The one at 6D is extra. If this is in the same block as one of the other possible 5's in the row something can still be done. Note that if the 5 in row six is at 6G everything goes fine because the other must be at 3F. This makes all other possible 5's in the F column impossible. The same when 6F is a 5. When 6D is the 5 however things are different: now all possible 5's in the block (block 5) can be eliminated. Hence in all cases all extra possible 5's that are both inside block 5 and column F can be eliminated as is done with the possible 5 in 4F.

Of course the principle holds when we exchange rows and columns.

The pratise sudoku was unique in 240000000 generated sudoku's:

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

14 The XY-wings configuration

The XY-wings configuration is formed by three cells, each with two possibilities. Together they have three different values as in the example:

	A	B	C	D	E	F	G	H	I
1	4	5	6	8	2	3	9	1	7
2	3	1	8	4	9	7	5	6	2
3	9	2	7	1	6	5	3	4	8
4	5	4	³ ₉	⁶ ₇	³ ₂	² _{7 8}	^{8 9}		1
5	8	7	2	5	1	9	4	3	6
6	1	6	³ ₉	³ ₇	8	4	² ₇	² ₉	5
7	2	8	5	9	4	1	6	7	3
8	6	3	4	² ₇	⁵ ₇	8	1	² ₅	9
9	7	9	1	^{2 3} ₅	³ ₅	6	⁸ ₈	^{2 5 8}	4

The center cell is 6D with possibilities 3 and 7. The wings are the cells 9D and 6G. They are in the same column or row respectively as the center cell. They share one possibility

with the cell 6D. These must be different possibilities. And in addition they share a third possibility with each other which is 2 in this case.

When the center cell has the value 3, the cell 9D must have the value 2 and when the center cell has the value 7 the cell 6G must have the value 2. This means that in either case the cell 9G cannot have the value 2. Hence we can scratch this possibility.

There is a variety to this configuration in which one of the wings is in the same block as the center cell:

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

In this case the center cell is 3I. Notice now that because the cell in 2G shares the block with the center cell, its column passes through the block of the other wing in 9I. The consequence is that we can eliminate all possibilities of the number 3 that are both in the column G and the block 9 (right bottom). Usually that will be just a single possibility anyway, but sometimes, as is the case here, the harvest is bigger.

And now the usual example:

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

15 Remote Pairs

Imagine we have a number of cells all with the same pair of possibilities, and imagine that they are all coupled in a way that if we select the number that goes in the first cell the numbers in the other cells are fixed. As in the example:

	A	B	C	D	E	F	G	H	I
1	9	1	8	2	4	5	³ ₇	³ ₇	³ ₆
2	5	2	7	3	8	6	4	1	9
3	4	6	3	¹ ₇	¹ _{7 9}		5	2	8
4	³ ₈	^{4 5} _{7 8}	2	9	6	¹ _{4 7 8}	³ _{7 8}	^{4 5} ₇	^{1 3} _{4 5}
5	³ ₈	^{4 5 9}	1	⁴ ₇	2	⁴ _{7 8}	³ _{7 8 9}	6	^{4 5 3}
6	6	7	⁴ ₉	5	3	¹ ₈	2	⁴ ₉	^{1 2}
7	7	8	5	¹ ₄	¹ ₉	^{2 3} ₉	^{2 3} _{6 9}	³ _{4 9}	^{2 3} _{4 6}
8	2	3	⁴ ₉	6	⁵ _{7 9}	⁴ _{7 9}	1	8	^{4 5}
9	1	⁴ ₉	6	8	⁵ ₉	^{2 3}	^{2 3} ₉	³ ₅	7

If we put a 4 in cell 9B, we get a 9 in cell 8C, a 4 in cell 6C and a 9 in cell 6H. In that case the position 9H shares the row with the 4 in 9B and the 9 in cell 6H. If we start with the 9

in 9B we end up with the 4 in 6H and hence again cell 9H cannot have a 4 or a 9. Hence we can eliminate those possibilities. We say that the distance between 9B and 6H is three in the chain 9B, 8C, 6C, 6H. If a cell shares a row with one element of a chain and a column with another element of the same chain and these elements have a distance in the chain that is odd, we can eliminate the numbers of the possibilities in the chain in that cell. Another example:

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

Here we could consider the chain as the cells 2E,1E,1H,2G,7G,9I,9F,6F,5D, 8D. In that case the distance between the cells 1H and 6F is five and we can eliminate the potential 4 in cell 6H. Alternatively we could write the chain as the cells 2E,1E,1H,2G,7G,9I,9F,8D,5D,6F. In that case the distance between the cells 1H and 6F is seven. Still odd. In complicated patterns the distance is not always unique but either it is always even or it is always odd.

The remote pairs technique occurs mostly near the end of the difficult part of the sudoku. This is because it requires lots of other steps first to create so many cells with only two possibilities. When most cells that are left have few possibilities the scratching of a few possibilities often leads to a quick resolution of the puzzle.

And now for practicing:

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

16 The XYZ-wings configuration

In this configuration we need a center cell with three possibilities and two wings, each with two possibilities which they have in common with the center cell. The wings should not have both the same possibilities. One of the wings must be in the same block as the center cell and the other must be outside the center cell on either the same row or in the same column as the center cell. It cannot be in the same row/column as the other wing. What does this mean:

	A	B	C	D	E	F	G	H	I
1	8	5	3	9	2	7	6	4	1
2	9	7	1	4	6	8	5	2	3
3	6	2	4	1	3	5	7	8	9
4	7	3	5	2	9	4	8	1	6
5	4	9	6	³ ₇	8	1	^{2 3} ₇	⁵ ₇	^{2 5} ₇
6	1	8	2	³ ₇	5	6	^{4 3} ₇	9	⁴ _X
7	2	4	7	⁶ ₈	1	3	9	^{5 6} ₈	⁵ ₈
8	5	¹ ₆	9	⁶ ₈	7	2	^{1 4} ₈	3	⁴ ₈
9	3	¹ ₆	8	5	4	9	^{1 2} ₇	⁶ ₇	² ₇

The center is in 5I and has the possibilities (2,5,7). The wing inside the block at 5H has the possibilities (5,7) and the wing in the same column at 9I has (2,7). Let us look at the cell at 9I. If it takes the value 2 the cell in 5I cannot have the value 2 and hence the cells 5H and 5I form a set of two and therefore the other 5's and 7's in the block can be scratched. If the cell in 9I takes the value 7, other positions in column I can no longer be 7. This means that in cell 6I the 7 will always be impossible and can be erased.

There is no need for the wing that is in the same block as the center cell to be in the same line or column as the center cell. This is shown in the following example:

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

If the cell in 7C takes the value 7 the 7 in 5C disappears and when it takes the value 8 there is the set of two (6,7) in the block and hence the 7 in 5C still disappears.

This is the sudoku for practicing:

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

17 The finned swordfish configuration

As with the finned X-wings the finned swordfish is a swordfish configuration with something extra. One of the rows/columns has one cell extra in one of the blocks with the result that we can only eliminate possibilities inside that block.

Let us have a look at the example:

	A	B	C	D	E	F	G	H	I
1	<div>4 7</div> 6	9	<div>7 8</div> 6	3	<div>4 5 6 8</div>	<div>1 6</div> ✕	<div>1 4 5</div>	2	<div>4 5 7 8</div>
2	1	<div>4 7</div>	3	<div>4 7</div>	<div>5 8</div>	2	6	<div>5 9</div>	<div>5 8 9</div>
3	5	<div>4 7</div> <div>2 6</div>	<div>2 6</div> <div>7 8</div>	<div>6 4</div> <div>7 7</div>	<div>4 6</div> <div>8</div>	9	3	<div>1 4</div> <div>7 7</div>	<div>4 7</div> <div>8</div>
4	<div>4 7</div> 6	8	<div>1 7</div> <div>5 6</div>	2	<div>4 7</div> 6	3	<div>1 4 5</div>	<div>1 4 5</div> <div>7 9</div>	<div>5 6 7</div> <div>9</div>
5	<div>4 7</div> <div>2 6</div> <div>4 9</div>	<div>1 2</div> <div>6 7</div>	<div>1 2</div> <div>6 9</div>	5	<div>4 7</div> 6	<div>4 6</div>	<div>1 4</div>	8	3
6	3	<div>4 7</div> 6	<div>5 6</div> <div>7</div>	9	1	8	2	<div>4 5</div> <div>7</div>	<div>4 5 6</div> <div>7</div>
7	8	5	4	6	2	7	9	3	1
8	<div>2 6</div> <div>9</div>	<div>1 2</div> <div>6</div>	<div>1 2</div> <div>6 9</div>	8	3	<div>1 4</div>	7	<div>4 5</div>	<div>4 5</div> <div>2</div>
9	<div>2 7</div>	3	<div>1 2</div> <div>7</div>	<div>1 4</div>	9	5	8	6	<div>4 2</div>

There are three columns with three possibilities for the number 4 (A and G) and there is one column with four possibilities for this number (column E). The extra possibility is in cell

3E. The rows affected by the swordfish are the rows 1, 4 and 5. Because the fin is in block 2 (center top) that means that all extra possibilities for number 4 that are both in row 1 and block 2 can be eliminated. Hence we can scratch the 4 in cell 1F.

Again a complete configuration with all 10 cells is rare. Usually one or more cells are missing. This can sometimes be rather confusing as in:

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

And again one to practice with:

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

18 The WXYZ-wings configuration

The WXYZ-wings configuration needs four cells. The center cell has three possibilities and the three wings each have two possibilities. The wings share one of their possibilities with the center cell (all three a different one) and their second possibility they share with each other. One or two of the wings are in the same block as the center cell and the other(s) is/are either on the same row or on the same column as the center cell. The three wings cannot all three be in the same row or column, because then we would just have a set of 4. Neither can all four cells be in the same block. Let us look at the example:

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

The center cell is 3H. The others are the wings. No matter which of the three values the center takes, one of the wings will take the value 8. This means that all other cells on row 3 and inside block 3 (right-top) can have the 8 scratched.

In the second example we have two wings inside the same block as the center cell but the result is the same: the possible 3 in cell 8C gets eliminated.

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

And now for practice:

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

19 Coloring

Coloring is a technique that involves some reasoning. Let us take the following board:

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

We notice that in row 2 the 2 can occur only in two positions (also the 3 but we concentrate on the 2's at the moment). We will call one red and one blue. This gives the following start position:

	A	B	C	D	E	F	G	H	I
1	8	² ₄	^{1 2} ₄	6	9	^{1 2} ₅	² ₇	² _{4 5 7}	3
2	9	6	3	4	7	² ₅	1	² ₅	8
3	5	7	^{1 2} ₄	^{1 2}	3	8	6	9	² ₄
4	^{2 3} ₄	8	² ₄	5	1	7	^{2 3} ₄	6	9
5	^{2 3} ₄	1	5	9	8	6	^{2 3} ₄	² ₄	7
6	6	9	7	3	2	4	8	1	5
7	² ₄	3	6	8	5	9	² ₇	² _{4 7}	1
8	1	² ₄	9	7	6	3	5	8	² ₄
9	7	5	8	^{1 2}	4	^{1 2}	9	3	6

What we will do now is color other two's when we see they must have the same color as one of those two. This until we run into a cell of which the 2 is adjacent to both a red and a blue 2:

	A	B	C	D	E	F	G	H	I
1	8	²	^{1 2} ₄	6	9	^{1 2} ₅	² ₇	² _{4 5 7}	3
2	9	6	3	4	7	² ₅	1	² ₅	8
3	5	7	^{1 2} ₄	^{1 2}	3	8	6	9	² ₄
4	^{2 3} ₄	8	²	5	1	7	^{2 3} ₄	6	9
5	^{2 3} ₄	1	5	9	8	6	^{2 3} ₄	² ₄	7
6	6	9	7	3	2	4	8	1	5
7	²	3	6	8	5	9	² ₇	² _{4 7}	1
8	1	² ₄	9	7	6	3	5	8	²
9	7	5	8	^{1 2}	4	^{1 2}	9	3	6

Note now the possible two in cell 1F. In the red case it gets eliminated and in the blue case it gets eliminated. Hence it will always be eliminated and we can cross it out.

Note that many of the cells we cannot say much about. But that is not needed. We only know that cell 1F will have either a red cell at 1B or a blue cell at 2F.

Sometimes a coloring leads to a contradiction. Take the next coloring:

	A	B	C	D	E	F	G	H	I
1	8 ⁴	²	^{1 2} ₄	6	9 ¹	⁵	⁴ ₇	^{4 5} ₇	3
2	9	6	3	4	7	² ₅	1	² ₅	8
3	5	7	¹ ₄	^{1 2}	3	8	6	9	² ₄
4	^{2 3} ₄	8	² ₄	5	1	7	^{2 3} ₄	6	9
5	^{2 3} ₄	1	5	9	8	6	^{2 3} ₄	² ₄	7
6	6	9	7	3	2	4	8	1	5
7	² ₄	3	6	8	5	9	² _{4 7}	² _{4 7}	1
8	1	² ₄	9	7	6	3	5	8	² ₄
9	7	5	8	^{1 2}	4	^{1 2}	9	3	6

When we work this out we obtain that the red cell in 3I forces the cell in 8I to be blue. This forces the cell in 7A to be blue and this again forces the cell in 4C to be blue. But this is impossible because the cell in 3C is already blue. In addition we can show some more cells that have to be blue and some that have to be red.

	A	B	C	D	E	F	G	H	I
1	8 ⁴	²	^{1 2} ₄	6	9 ¹	⁵	⁴ ₇	^{4 5} ₇	3
2	9	6	3	4	7	² ₅	1	² ₅	8
3	5	7	¹ ₄	^{1 2}	3	8	6	9	² ₄
4	^{2 3} ₄	8	² ₄	5	1	7	^{2 3} ₄	6	9
5	^{2 3} ₄	1	5	9	8	6	^{2 3} ₄	² ₄	7
6	6	9	7	3	2	4	8	1	5
7	² ₄	3	6	8	5	9	² _{4 7}	² _{4 7}	1
8	1	² ₄	9	7	6	3	5	8	² ₄
9	7	5	8	^{1 2}	4	^{1 2}	9	3	6

The important thing is that blue leads to a contradiction and hence blue cannot be the choice. In addition we can scratch the cells in 1G and 1H because they are at the intersection of red and blue. Anyway, since red has to be the choice all other possible 4's in that block will disappear. So finally we obtain

	A	B	C	D	E	F	G	H	I
1	8 ² _✕	^{1 2} ₄		6	9 ¹ ₅	[✕] ₇	[✕] ₇	3	
2	9	6	3	4	7 ² ₅		1 ² ₅	8	
3	5	7 ¹ _✕	^{1 2} ₄		3	8	6	9 ² ₄	
4	^{2 3} ₄	8 ² _✕		5	1	7 ^{2 3} ₄		6	
5	^{2 3} ₄	1	5	9	8	6 ^{2 3} ₄	⁴ ₂	7	
6	6	9	7	3	2	4	8	1	
7	² _✕	3	6	8	5	9 ² _{4 7}	⁴ ₂	1	
8	1 ⁴ ₂		9	7	6	3	5	8 [✕] ₂	
9	7	5	8 ^{1 2} ₄		4 ^{1 2} ₅		9	3	

The major problem with the coloring method is what techniques we are willing to apply to determine which elements should be one color and which should be the other. Do we allow pointing and claiming? Do we allow X-wings or even swordfish? The more techniques we use, the more this starts looking like trial and error. We use the word coloring when only very direct approaches are used and no special methods. When pointing and claiming are included we call it advanced coloring. We do not consider more methods.

The coloring technique is also messy to apply. You need some form of shadow administration because many times you try the coloring in vain. It then makes a horrible mess of your pencilmarks. Combined with that many difficult sudoku's may involve several steps that need the coloring method we are not too wild about it and have decided to exclude the coloring method for at least part of the sudoku's in the book. In the others we have made an attempt to limit the number of colorings.

For practical applications in our eyes the easiest method is to use a piece of stiff transparent plastic. Put this over the sudoku and then use colors on the plastic. If one uses washable ink, one can clean the plastic easily and use it again for the next attempt at coloring.

And now the sudoku for practicing coloring:

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

20 Sudoku's without coloring

1

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

2

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

3

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

4

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

5

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

6

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

7

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

8

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

9

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

10

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

11

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

12

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

13

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

14

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

15

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

16

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

17

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

18

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

19

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

20

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

21

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

22

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

23

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

24

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

25

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

26

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

27

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

28

	8							
		2		5				
3				8				4
6	3				5			
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122

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123

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124

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125

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126

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127

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128

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129

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130

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131

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132

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133

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134

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135

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136

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137

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138

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139

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140

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141

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142

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143

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144

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145

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146

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147

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148

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149

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150

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151

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152

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153

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154

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155

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156

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157

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158

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159

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160

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161

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162

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163

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164

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165

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166

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167

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168

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169

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170

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172

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173

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174

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175

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176

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177

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178

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179

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180

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181

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182

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183

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184

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185

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186

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187

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188

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189

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190

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191

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192

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193

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194

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195

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196

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197

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198

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199

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200

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21 Sudoku's with coloring

201

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202

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203

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204

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205

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206

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207

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208

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209

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211

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212

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213

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214

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	8				5			
				4				
7				9	4			
			5	8		7		
		8						3

400

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

22 Solutions

It is traditional to publish solutions in the back of sudoku books. In the case of our sudoku's however the more interesting thing is not the solution but how one obtains the solution. The fact that there is a unique solution means automatically that if you find a solution that contains the start numbers in their original position and if there are no rows, columns and blocks that contain the same number twice, it must be automatically the correct solution. We trust that anybody who has a good shot at the sudoku's in this book, can determine whether his or her solution is proper. Hence not much is gained by showing the solution. Rather we show a mysterious string of characters that represents a path to the solution. There is no guarantee that this path is unique though. The reason is that we apply always the simplest method that will make progress. It may be possible that skipping a number of simple techniques and going to a more complicated technique solves the sudoku much faster. It would be rather complicated to investigate this systematically. Also, when the same method can be used in more than one way, there is an order in which we apply them which may be different from the order in which the reader applies them. But usually the bottlenecks are at a fixed location and knowing the encryption we used will reveal what is the critical step. One may wonder why we need this complicated encryption system, but that is a) a matter of space and b) a matter of not making it too easy for the reader to look up the answer and spoil the fun for that sudoku. The matter of space should be clear: a sufficiently complicated sudoku might need 10 pages or more to show all steps in the solution graphically. That means that with 2 sudoku's per page we would need 20 times the space for the solutions. This would not leave much space for our sudoku's.

Let us start simple and have a look at the sudoku that was used in the section on pencilmarks. The solution from the point where we started would be

a72 cCc d2r bIb8 h25 2H5 3D5 2D2 1G2 3A2 2C1 1A8 3F1 2F4 3H4 2I8 6B8 5A1 6H1 5H8 7B1 9B7 8C8 8G1 7H2 9C2 7C4 7I7 7G6 5I6 5G4 9I4 9G8

The simple moves that place a number in a cell are given by a coordinate followed by this number as in 2H5 which indicates that we place a 5 at position 2H. Similarly 9G8 means that we place 8 at position 9G. The interesting moves are the ones that start with an alphabetic character. This character indicates the method used and in each case the characters that follow have their own meaning. This is explained below:

- a** Pointing method. Followed by two digits. The first is the number of the block and the second the digit involved. Hence **a34** means pointing in block three (right top) involving number 4.
- b** Claiming method. If the third character is a c it concerns a column. In that case the second character is the letter of the column. If the third character is an r, it concerns a row and the second character is the number of the row. The fourth character is the number involved.
- c** A set of 2. The third character indicates r (row), c (column) or b (block). In the case of the c the second character is the letter of the column, otherwise it is number of either the row or the block.
- d** A set of 3. The third character indicates r (row), c (column) or b (block). In the case of the c the second character is the letter of the column, otherwise it is number of either the row or the block.

- e** An X-wings configuration. Followed either by two letters indicating two columns, the c of columns and the number involved, or by two digits for two rows, the r of rows and the number involved.
- f** A hidden set of 2. The third character indicates r (row), c (column) or b (block). In the case of the c the second character is the letter of the column, otherwise it is number of either the row or the block.
- g** A hidden set of 3. The third character indicates r (row), c (column) or b (block). In the case of the c the second character is the letter of the column, otherwise it is number of either the row or the block.
- h** Uniqueness type 1. Followed by 2 digits which are the possibilities in the main cells.
- i** Uniqueness type 1a. Followed by 2 digits which are the possibilities in the main cells.
- j** Uniqueness type 1b. Followed by 2 digits which are the possibilities in the main cells.
- k** Uniqueness type 2. Followed by 3 digits which are the possibilities in the main cells.
- l** Uniqueness type 2A. Followed by 2 digits which are the possibilities in the main cells.
- m** A set of 4. The third character indicates r (row), c (column) or b (block). In the case of the c the second character is the letter of the column, otherwise it is number of either the row or the block.
- n** A set of 5. The third character indicates r (row), c (column) or b (block). In the case of the c the second character is the letter of the column, otherwise it is number of either the row or the block.
- o** An almost linked set. The initial character is followed by two coordinates of the main and the second cells and a letter which indicates the mode: r for that the main cell is in a block and the second cell in a row, c for block + column, R for that the main cell is in a row and the second cell in a block and C for column + block.
- p** A swordfish configuration. Followed either by three letters indicating three columns, the c of columns and the number involved, or by three digits for three rows, the r of rows and the number involved.
- q** A finned X-wings configuration. Followed either by two letters indicating two columns, the c of columns and the number involved, or by two digits for two rows, the r of rows and the number involved.
- r** An XY-wings configuration. Followed by a digit and a letter indicating the coordinate of the center.
- s** Remote pairs. Followed by two digits which are the numbers in the pair.
- t** An XYZ-wings configuration. Followed by a digit and a letter indicating the coordinate of the center. An r or a c indicates whether the external cell is in the same row or the same column as the center cell.

- u** A finned swordfish configuration. Followed either by three letters indicating three columns, the c of columns and the number involved, or by three digits for three rows, the r of rows and the number involved.
- v** A jellyfish configuration. Followed either by four letters indicating four columns, the c of columns and the number involved, or by four digits for four rows, the r of rows and the number involved.
- w** A WXYZ-wings configuration. Followed by a digit and a letter indicating the coordinate of the center. After that is the extra number in the three wings.
- x** Coloring. Currently only followed by a digit which is the number involved in the coloring.

In principle this information is sufficient to find out which move you missed. Of course it is very well possible that you have the wrong pencilmarks in a cell and that this is the reason why you could not resolve the sudoku. There is very little we can do to help you there because that would require to give the graphical solutions to all nontrivial steps as we did in the section on pencilmarks. And this requires too much space again.

23 An example of a full solution

Here we present a sudoku and its solution, in which we have selected each time the simplest method that can eliminate one or more possibilities. Of course many times we can just assign a value to a cell. This will result in a single line in which this is mentioned. We have intentionally selected a complicated sudoku, just to show that such a solution takes very much space. In other words: we show here that it is impossible to present solutions to all sudoku's in the book in a graphical way.

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

block: Adding 7 at position 3E

block: Adding 3 at position 7C

Found a pointing veto (5)

	A	B	C	D	E	F	G	H	I
1	3	^{1 2} _{4 7}	² _{6 7}	¹ _{4 6}	8	9	^{1 2} ₆	5	² _{4 6}
2	¹ _{4 5 6}	¹ ₄	^{5 6} _{8 9}	2	^{1 3} _{4 6}	⁴ ₆	7	^{1 3} _{4 6}	⁴ _{8 6}
3	^{1 2} _{4 6}	^{1 2} _{4 8}	² ₈	^{1 3} _{4 6}	7	5	^{1 2 3} _{6 4}	^{1 2 3} ₈	9
4	^{1 2} _{5 6}	^{1 2} _{7 8}	4	^{5 6} ₈	² ₆	² _{7 8}	9	² ₇	3
5	9	^{2 3} _{7 8}	² _{5 6}	^{5 6} ₈	^{2 3} ₆	² _{7 8}	4	² ₇	1
6	² _{7 8}	^{2 3} _{7 8}	² _{7 8}	⁴ _{8 9}	^{2 3} _{4 9}	1	² _{5 8}	6	² _{5 7 8}
7	² _{4 8}	5	3	7	^{1 2} _{4 6}	² _{4 8}	^{1 2} _{6 4}	^{1 2} _{6 4}	² _{4 6}
8	² _{4 7}	² _{4 7 9}	² _{7 9}	¹ _{4 6 9}	5	3	^{1 2} ₆	8	² _{4 6}
9	² _{4 7 8}	6	1	⁴ _{8 9}	² _{4 9}	² _{4 8}	^{2 3} ₅	^{2 3} _{4 7 9}	² _{4 5 7}

Found a pointing veto (8)

	A	B	C	D	E	F	G	H	I
1	3	^{1 2} _{4 7}	² _{6 7}	¹ _{4 6}	8	9	^{1 2} ₆	5	² _{4 6}
2	¹ _{4 5 6}	¹ ₄	^{5 6} _{8 9}	2	^{1 3} _{4 6}	⁴ ₆	7	^{1 3} _{4 6}	⁴ _{8 6}
3	^{1 2} _{4 6}	^{1 2} _{4 8}	² ₈	^{1 3} _{4 6}	7	5	^{1 2 3} _{6 4}	^{1 2 3} ₈	9
4	^{1 2} _{5 6}	^{1 2} _{7 8}	4	^{5 6} ₈	² ₆	² _{7 8}	9	² ₇	3
5	9	^{2 3} _{7 8}	² _{5 6}	^{5 6} ₈	^{2 3} ₆	² _{7 8}	4	² ₇	1
6	² _{7 8}	^{2 3} _{7 8}	² _{7 8}	⁴ _{8 9}	^{2 3} _{4 9}	1	² _{5 8}	6	² _{5 7 8}
7	² _{4 8}	5	3	7	^{1 2} _{4 6}	² _{4 8}	^{1 2} _{6 4}	^{1 2} _{6 4}	² _{4 6}
8	² _{4 7}	² _{4 7 9}	² _{7 9}	¹ _{4 6 9}	5	3	^{1 2} ₆	8	² _{4 6}
9	² _{4 7 8}	6	1	⁴ _{8 9}	² _{4 9}	² _{4 8}	^{2 3} ₅	^{2 3} _{4 7 9}	² _{4 5 7}

Found a pointing veto (8)

	A	B	C	D	E	F	G	H	I
1	3	^{1 2} _{4 7}	² _{6 7}	¹ _{4 6}	8	9	^{1 2} ₆	5	² _{4 6}
2	¹ _{4 5 6}	¹ ₄	^{5 6} _{8 9}	2	^{1 3} _{4 6}	⁴ ₆	7	^{1 3} _{4 6}	⁴ _{8 6}
3	^{1 2} _{4 6}	^{1 2} _{4 8}	² ₈	^{1 3} _{4 6}	7	5	^{1 2 3} _{6 4}	^{1 2 3} ₈	9
4	^{1 2} _{5 6}	^{1 2} _{7 8}	4	^{5 6} ₈	² ₆	² _{7 8}	9	² ₇	3
5	9	^{2 3} _{7 8}	² _{5 6}	^{5 6} ₈	^{2 3} ₆	² _{7 8}	4	² ₇	1
6	² _{7 8}	^{2 3} _{7 8}	² _{7 8}	⁴ _{8 9}	^{2 3} _{4 9}	1	² _{5 8}	6	² _{5 7 8}
7	² _{4 8}	5	3	7	^{1 2} _{4 6}	² _{4 8}	^{1 2} _{6 4}	^{1 2} _{6 4}	² _{4 6}
8	² _{4 7}	² _{4 7 9}	² _{7 9}	¹ _{4 6 9}	5	3	^{1 2} ₆	8	² _{4 6}
9	² _{4 7 8}	6	1	⁴ _{8 9}	² _{4 9}	² _{4 8}	^{2 3} ₅	^{2 3} _{4 7 9}	² _{4 5 7}

Found a pointing veto (9)

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

Found veto pair (2)

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

Found a claiming veto (2)

	A	B	C	D	E	F	G	H	I
1	3	^{1 2} _{4 7}	² ₇	¹ _{4 6}	8	9	^{1 2} ₆	5	² _{4 6}
2	¹ _{4 5 6}	¹ ₄	^{5 6} _{8 9}	2	^{1 3} _{4 6}	⁴ ₆	7	^{1 3} _{4 8 6}	
3	^{1 2} _{4 6}	^{1 2} _{4 8}	² ₈	^{1 3} _{4 6}	7	5	^{1 2 3} _{6 4}	^{1 3} ₈	9
4	^{1 2} _{5 6}	^{1 2} ₈	4	^{5 6} ₈	² ₆	² _{7 8 6}	9	² ₇	3
5	9	^{2 3} ₈	² _{5 6}	^{5 6} ₈	^{2 3} ₆	² _{7 8 6}	4	² ₇	1
6	² ₇	^{2 3} ₇	² ₇	⁴ ₉	³ _{4 9}	1	⁵ ₈	6	⁵ ₈
7	² _{4 8}	5	3	7	^{1 2} _{4 6 9}	² _{4 8}	^{1 2} _{6 4}	¹ ₉	² _{4 6}
8	² _{4 7}	² _{7 9}	² _{7 9}	¹ _{4 6}	5	3	^{1 2} ₆	8	² _{4 7 6}
9	² _{4 7 8}	6	1	⁴ _{8 9}	² _{4 9}	² _{4 8}	^{2 3} ₅	³ _{4 5 9 7}	

Found veto pair (1)

	A	B	C	D	E	F	G	H	I
1	3	^{1 2} _{4 7}	² ₇	¹ _{4 6}	8	9	^{1 2} ₆	5	² _{4 6}
2	¹ _{4 5 6}	¹ ₄	^{5 6} _{8 9}	2	^{1 3} _{4 6}	⁴ ₆	7	^{1 3} _{4 8 6}	
3	^{1 2} _{4 6}	^{1 2} _{4 8}	² ₈	^{1 3} _{4 6}	7	5	^{1 2 3} _{6 4}	^{1 3} ₈	9
4	¹ _{5 6}	¹ ₈	4	^{5 6} ₈	² ₆	² _{7 8 6}	9	² ₇	3
5	9	³ ₈	³ _{5 6 8}	³ _{5 6 8}	^{2 3} ₆	² _{7 8 6}	4	² ₇	1
6	² ₇	³ ₇	² ₇	⁴ ₉	³ _{4 9}	1	⁵ ₈	6	⁵ ₈
7	² _{4 8}	5	3	7	^{1 2} _{4 6 9}	² _{4 8}	^{1 2} _{6 4}	¹ ₉	² _{4 6}
8	² _{4 7}	² _{7 9}	² _{7 9}	¹ _{4 6}	5	3	^{1 2} ₆	8	² _{4 7 6}
9	² _{4 7 8}	6	1	⁴ _{8 9}	² _{4 9}	² _{4 8}	^{2 3} ₅	³ _{4 5 9 7}	

Single: Adding 3 at position 6B

Single: Adding 8 at position 5B

Single: Adding 1 at position 4B

Found veto triplet (2)

	A	B	C	D	E	F	G	H	I
1	3 _{4 7} ²	² ₇	¹ _{6 4}	8 _{4 6}	9 _{4 6}	5 _{4 6} ²			
2	¹ _{4 5 6}	4 ₉	⁵ _{8 9}	2 _{4 6} ^{1 3}	7 _{4 6} ^{1 3}				
3	^{1 2} _{4 6}	² ₈	¹ _{4 6}	7 _{4 6}	5 _{4 6}	^{1 2 3} ₈			9 _{4 6}
4	^{5 6}	1 ₈	4 ₈	^{5 6} ₈	² _{7 8}	9 _{7 8} ²			3 _{7 8}
5	9 _{7 8}	8 _{7 8}	^{5 6}	^{5 6}	^{2 3} ₆	4 _{7 8} ²			1 _{7 8}
6	² ₇	3 ₇	² ₉	4 ₉	1 ₉	⁵ ₈	6 ₈ ⁵		
7	² _{4 8}	5 _{4 8}	3 _{4 8}	7 _{4 8}	^{1 2} _{6 9}	² ₈	1 ₉ ²		6 _{4 8}
8	² _{4 7}	² _{7 9}	² ₉	¹ _{4 6}	5 _{4 6}	3 _{4 6}	8 _{4 6} ²		
9	² _{4 7 8}	6 _{7 8}	1 _{7 8}	⁴ _{8 9}	² ₉	² ₈	³ ₅	³ _{4 9}	² _{5 7}

Found a pointing veto (2)

	A	B	C	D	E	F	G	H	I
1	3 _{4 7} ²	² ₇	¹ _{6 4}	8 _{4 6}	9 _{4 6}	5 _{4 6} ²			
2	¹ _{4 5 6}	4 ₉	⁵ _{8 9}	2 _{4 6} ^{1 3}	7 _{4 6} ^{1 3}				
3	^{1 2} _{4 6}	² ₈	¹ _{4 6}	7 _{4 6}	5 _{4 6}	^{1 2 3} ₈			9 _{4 6}
4	^{5 6}	1 ₈	4 ₈	^{5 6} ₈	² _{7 8}	9 _{7 8} ²			3 _{7 8}
5	9 _{7 8}	8 _{7 8}	^{5 6}	^{5 6}	^{2 3} ₆	4 _{7 8} ²			1 _{7 8}
6	² ₇	3 ₇	² ₉	4 ₉	1 ₉	⁵ ₈	6 ₈ ⁵		
7	² _{4 8}	5 _{4 8}	3 _{4 8}	7 _{4 8}	^{1 2} _{6 9}	² ₈	1 ₉ ²		6 _{4 8}
8	² _{4 7}	² _{7 9}	² ₉	¹ _{4 6}	5 _{4 6}	3 _{4 6}	8 _{4 6} ²		
9	² _{4 7 8}	6 _{7 8}	1 _{7 8}	⁴ _{8 9}	² ₉	² ₈	³ ₅	³ _{4 9}	² _{5 7}

Found an x-wings configuration(1)

	A	B	C	D	E	F	G	H	I
1	3 _{4 7} ²	² ₇	¹ _{6 4}	8 _{4 6}	9 _{4 6}	5 _{4 6} ²			
2	¹ _{4 5 6}	4 ₉	⁵ _{8 9}	2 _{4 6} ^{1 3}	7 _{4 6} ^{1 3}				
3	^{1 2} _{4 6}	² ₈	¹ _{4 6}	7 _{4 6}	5 _{4 6}	^{1 2 3} ₈			9 _{4 6}
4	^{5 6}	1 ₈	4 ₈	^{5 6} ₈	² _{7 8}	9 _{7 8} ²			3 _{7 8}
5	9 _{7 8}	8 _{7 8}	^{5 6}	^{5 6}	^{2 3} ₆	4 _{7 8} ²			1 _{7 8}
6	² ₇	3 ₇	² ₉	4 ₉	1 ₉	⁵ ₈	6 ₈ ⁵		
7	² _{4 8}	5 _{4 8}	3 _{4 8}	7 _{4 8}	^{1 2} _{6 9}	² ₈	1 ₉ ²		6 _{4 8}
8	² _{4 7}	² _{7 9}	² ₉	¹ _{4 6}	5 _{4 6}	3 _{4 6}	8 _{4 6} ²		
9	² _{4 7 8}	6 _{7 8}	1 _{7 8}	⁴ _{8 9}	² ₉	² ₈	³ ₅	³ _{4 9}	² _{5 7}

Forced spectators out (hidden pair)

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

Forced spectators out (hidden triplet) (2)

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

Found a pointing veto (4)

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

Found an xyz-wings configuration(1,5,6)

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

Found veto triplet (1)

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

Invoked uniqueness(1)

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

block: Adding 7 at position 5F

block: Adding 2 at position 4E

block: Adding 2 at position 5H

block: Adding 7 at position 4H

Found veto pair (2)

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

row: Adding 9 at position 7H

block: Adding 1 at position 8G

block: Adding 1 at position 7E

block: Adding 1 at position 1D

Invoked uniqueness(1)

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

block: Adding 9 at position 9E
 block: Adding 9 at position 6D
 block: Adding 4 at position 6E
 Single: Adding 8 at position 9D
 block: Adding 8 at position 4F
 block: Adding 8 at position 7A
 Invoked uniqueness(1b)

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

Found a finned x-wings configuration(6)

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

Found an xy-wings configuration(1,2,9)

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

block: Adding 3 at position 2E
 block: Adding 3 at position 5D
 block: Adding 5 at position 4D
 block: Adding 5 at position 5C
 block: Adding 5 at position 2A
 block: Adding 1 at position 3A
 block: Adding 1 at position 2H
 block: Adding 6 at position 4A
 block: Adding 6 at position 5E
 Found a swordfish configuration(4)

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

Single: Adding 2 at position 3B

Single: Adding 2 at position 9F

Found a pointing veto (2)

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

Forced spectators out (hidden pair)

	A	B	C	D	E	F	G	H	I
1	3 _{4 7}	₇	₆	1	8	9	_{2 6}	5	_{4 2} ✕
2	5 ₄	₉	_{6 8 9}	2	3 _{4 6}	7	1	_{8 6}	
3	1	2	₈	_{4 6}	7	5 _{3 4}	₈	₃	9
4	6	1	4	5	2	8	9	7	3
5	9	8	5	3	6	7	4	2	1
6	_{2 7}	3 ₇	₂	9	4	1	_{5 8}	6	_{5 8}
7	8 _{2 7}	5	3 ₂	7	1 _{4 6}	_{2 6}	9	_{4 2} ✕	
8	_{4 7}	_{7 9}	_{7 9}	_{4 6}	5	3	1	8	_{7 6}
9	_{4 7}	6	1	8	9	2	_{5 3 4}	₃	_{5 7}

Applied coloring (6)

	A	B	C	D	E	F	G	H	I
1	3 _{4 7}		₇ ✕	1	8	9	_{2 6}	5	_{4 2}
2	5 ₄	₉	_{6 8 9}	2	3 ₄ ✕	7	1	₈ ✕	
3	1	2	₈ ✕	_{4 6}	7	5 _{3 4}	₈	₃	9
4	6	1	4	5	2	8	9	7	3
5	9	8	5	3	6	7	4	2	1
6	_{2 7}	3 ₇	₂	9	4	1	_{5 8}	6	_{5 8}
7	8 _{2 7}	5	3 ₂	7	1 _{4 6}	₂ ✕	9	_{4 2}	
8	_{4 7}	_{7 9}	_{7 9}	₄ ✕	5	3	1	8	_{7 6}
9	_{4 7}	6	1	8	9	2	_{5 3 4}	₃	_{5 7}

block: Adding 6 at position 2C
block: Adding 8 at position 3C
block: Adding 9 at position 2B
block: Adding 4 at position 1B
block: Adding 7 at position 1C
block: Adding 6 at position 3D
block: Adding 4 at position 2F
block: Adding 4 at position 3H
block: Adding 3 at position 3G
block: Adding 6 at position 1G
block: Adding 2 at position 1I
block: Adding 8 at position 2I
block: Adding 7 at position 6A
block: Adding 2 at position 6C
block: Adding 8 at position 6G

block: Adding 5 at position 6I
 block: Adding 2 at position 8A
 block: Adding 4 at position 9A
 block: Adding 7 at position 8B
 block: Adding 9 at position 8C
 block: Adding 4 at position 8D
 block: Adding 6 at position 7F
 block: Adding 2 at position 7G
 block: Adding 3 at position 9H
 block: Adding 4 at position 7I
 block: Adding 5 at position 9G
 block: Adding 6 at position 8I
 block: Adding 7 at position 9I

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

The difficulty was 48 and the scoring was 1405

The moves 3E7 7C3 **a65 a68 a78 a79 cHc b6r7 c6r** 6B3 5B8 4B1 **dGc a32 e81r1 f7r**
gAc a14 t5Fr d5r h27 5F7 4E2 5H2 4H7 **cEc** 7H9 8G1 7E1 1D1 **h49** 9E9 6D9 6E4 9D8
 4F8 7A8 **j26 q43r6 r2I** 2E3 5D3 4D5 5C5 2A5 3A1 2H1 4A6 5E6 **p127r4** 3B2 9F2 **a72 fIc**
x6 2C6 3C8 2B9 1B4 1C7 3D6 2F4 3H4 3G3 1G6 1I2 2I8 6A7 6C2 6G8 6I5 8A2 9A4 8B7
 8C9 8D4 7F6 7G2 9H3 7I4 9G5 8I6 9I7

24 The solutions

1: 3D9 3G1 3H8 1H5 **a58 a92 a99 b7r8 c7r** 1E7 3E4 1B4 1C1 3F5 7A4 7C8 7B9 4C9
 3C2 **a45 cIc q95r1 o5E6Br t4Fr u913r3 q28r3 eFCc3** 5B3 6H3 **e95r1 o8F9Ar** 8A7
o9D8Cr p135r6 cAc r6I r8G 6D5 4B5 5A6 2C6 3A3 1D6 2F3 1I3 3I6 6B1 5E1 4F6 4D8
 6A8 4A2 5D2 6F7 6I2 5G5 5H9 9A1 8C3 9C5 8B6 8F1 7F2 9D3 8E5 7D7 9E8 8H2 9H6 9G7
 4H7 2I7 2G9 2H4 4G4 8G8 8I9

2: 2B6 3D7 3F3 5A6 4C7 8C2 8A3 1C3 1A5 9E9 8G7 1H7 2G9 5F9 3A9 3B4 3C1 6B1
 4B9 5C5 6I9 7A1 9A4 8I1 **a28 a34 a82 a94 a96 c6r cHc d7r q67r5 q67r8** 8F4 **eHFc8**
t5Gr u439r2 5E4 2D4 **o5D7FC j36 c4r p349r2 r3G** 5G1 2H1 1E1 3E8 2F2 2E5 3G2

6H8 5D8 4E2 6D6 4D3 6F5 5H2 6G3 4G5 4I6 7D2 8D5 9B5 8B8 8E6 7F8 9I2 7H5 7G6 7I4
1G4 1I8 9G8

3: 3H3 6C7 4D3 5G1 4G7 6H9 9B1 8E1 8H6 9E5 **a37 a38** 8G5 7G4 9H7 1I7 7F7 3D7
9F3 9D8 **q47r9 eEAc9 t7Cr d7r h38** 7C3 8A8 6B8 3C8 2G8 1G9 3G6 8I3 7I8 6E6 **q34r4**
6I4 5I2 **pCDHc2 o6A7Bc t1Cr t2Dr uBDHc4 r4A** 9A6 9C4 1A1 3F1 6F2 4B2 6A5 7B5
r1C 1H4 2H2 3E2 1C2 2B6 3A4 2D4 1F6 1D5 2F9 5B4 5C6 4A9 4E4 5F5 5D9 7A2 8C9
8D2 7E9

4: 4B5 5E7 4H2 1F9 2F1 3F2 6E2 6F3 5C3 3B3 2H3 **a59 a71 bIc1 c9r** 4A7 **d7b** 9C2
7G2 **a78 h78 q28r5 c9r t8Hr** 1G7 **e91r5 f8r p147r6 u629r9** 4C6 5G6 **a49 a69 gIc h19**
4I9 5D9 4D1 6G1 3I1 5A1 5I8 8I4 9A4 9G9 6B4 **r3A** 1C4 3A8 2A6 2C9 3E6 2E4 1D5 3G4
2G5 1H8 1I6 6C8 6A9 7D4 9D3 8E5 7E9 8B9 7B8 9F8 7F7 8C7 7C1 8H1 7I3 9I5 7H6 9H7
8G8

5: 5G4 6I8 5H1 4F3 4I6 **a62 a65 a89 b3r7 d6r dCc a14 b8r4 fAc gBc d4b a46**
u724r7 8B7 3A7 4C7 5A9 3B9 1G9 1H3 5D7 4E9 9C9 7C4 7F9 7D8 9I4 **o3F1Ar pAEHc6**
d1r t8Er a85 f2r q28r1 7E5 **a81 r2E** 9G6 2H6 1A6 2A8 3F6 1F8 1I7 2E7 1E1 2G1 3G8
6D6 5C6 8F1 8D4 2F4 1B4 1C2 2B5 1D5 5B2 6C5 6F2 5F5 9D3 7A3 6B3 6A1 9B1 8E6 7I1
8G3 8H5 4G5 4H2 7G2 7H7

6: 4E8 5E9 5G6 9D7 7I7 8G8 6D1 **a45 a63 a67 a94 b7r3 f4r a49** 9A9 **u946r2 uECIc6**
a26 7C6 7E4 **dBc c5r dCc fAc a11** 1E6 **a17 k513** 1B1 4A1 4B5 7A5 7B3 5A3 5C7 1A7
qECc2 q53r4 r1H 6G4 **a69 t3Ir** 3G9 2B9 **eDBc4 s28 e53r2** 8A2 3B2 2A4 3D4 1D5 2D8
3I8 1C8 3C3 2F3 2E2 3F1 2H1 1H3 3H5 2I6 2G7 4F4 5B4 5D2 6I5 4I2 6C2 4C9 4G3 4H7
6H9 9C4 9E1 9F2 8D3 8F6 9I3 8H4 9H6

7: 1B5 3C8 3D3 1E9 3A9 6E8 4B8 6D9 9F7 7E6 8E4 7C4 7G8 3I6 9H6 2D2 2E5 5E1
4H4 **f6b a67 h14 q48r9** 9B9 **pBDHc1 r1G o3G9Ic t6Cr u519r3 cCc a17 r7A** 9A1
9G3 6I3 5G5 6F5 9I4 3G4 1F4 3F1 6B1 4G1 **c8r s78** 7H1 8D1 7D5 8I5 8H9 4I9 5C9 4F2
5F6 4C6 2A6 1A7 1C3 2C1 1I1 1G2 2I7 7I2 8C2 5A2 5B3 6C7 6H2 5H7 7A3 7B7 8G7

8: 1F5 7B6 8H6 4G6 6D6 2F6 1C6 1A3 2C9 4D7 4F2 7D3 9D2 6B8 **a28 c3r c3r q28r1**
q59r4 uCBEc4 a44 pADHc4 o9B8Dr i28 d7r b7r8 u617r9 q85r9 eIFc9 c5r bIc7
dGc r5F c6r 4A1 3B1 2A4 2D1 1D8 3E4 1H4 1G9 5F4 4C4 5C3 6E9 4E3 6I3 6H2 2I2 2H8
4I8 4H5 3G5 3H7 5G7 5H1 5I9 8C1 9B4 7E1 8D4 8F9 9F8 8A8 3C8 3A2 7C2 7A5 6C5 6A7
9C7 9G1 9I5 8I7 7G8 7H9

9: 1E8 3A8 3H4 6F8 4I8 9B8 7G8 3I1 8G9 5E7 **a21 a42 a46 b8r2** 1G2 **d8r dCc** 7A9
a74 o4C5Fr eFBc9 q19r6 8H2 **uDCIc5 uDCGc6** 8E6 8I3 2G3 **f9r h23** 9D2 7C2 9C3
7E3 6D3 6H9 2E1 6E4 4B4 8A4 4H7 **a66 pCDIc5** 7H1 **r1H a27 r2I** 2C6 2I5 3G7 1D7 2B7
3C9 3D6 2F9 2D4 1H6 6A7 5A6 5B9 6B2 4C5 5F5 4D9 5I2 6I6 7F4 7D5 9F7 8F1 9A1 1B1
1A5 8B5 9H5 9G6 7I7

10: 4I5 2F8 6A3 **a16 gEc c2r** 2B2 6B7 6G9 4F9 4C2 **a29 a57 b8r9 d5r o2D9Fc q69r6**
uIEFc7 4G7 2H7 3F7 2D3 9F3 8C3 8B9 **c3r cCc d9r e95r4 h69** 3D9 1C9 3C6 1F6 1D2
7F2 **p238r1** 4H1 5G4 4A4 9B4 **r3I** 7I8 1G8 3I1 2E1 1B1 2A5 1E5 3E4 5C1 5B8 8A1 7B5
7A6 9C8 9G1 7H4 1I4 1H3 5I3 6I2 5E2 5D7 6E6 5H6 8D6 9E7 7E9 9I6 8I7 9H9

11: 4D5 4F8 5F4 4I4 2G4 1C4 9E4 7B4 8G9 9D9 1F9 7G6 8F6 3G3 **a15 a87 c9b b9r3**
dIc a62 d6r 5A7 2A9 **a43 fCc q57r3 t1Dr u368r1 c2r o6C3Bc p368r1 uDAIc2** 3F2
3B5 6C5 **r3C** 2H6 1E6 **cEc** 3H8 **h57** 1H5 2I7 3C7 2B1 1A8 2C2 3E1 1D7 1I2 4A1 4C3 4B6
6B2 5B9 5D1 6F3 6E7 6I1 4H2 5H3 6H9 8C1 7A2 9A3 9C6 9B8 8D2 7F7 8E8 2D8 2E3 7D3
7H1 8I3 9I5 9H7

12: 2D4 5C5 4B6 6B4 6A7 6C3 6E8 5D9 7C1 9D1 8F4 2B7 2C2 9B2 **a32 a52 a97 b3r5**
bIc9 d3r b3r8 cFc q29r8 a98 d9r u715r3 c8r eIAC6 c1r gGc o8I7Dr cDc c4r p489r3

r7F 4F2 4D5 **t1Ir** 2A5 1B8 3C9 1A6 3H6 2G8 2I1 1H9 4G1 4H4 5G6 4I3 5F3 1D3 1F7 4E7 5H7 8C6 8A8 9A3 7B9 8E3 8D2 3E2 3F5 3D8 9E5 7D7 7F8 7G3 9G4 7I5 1G5 1I2 6G2 6I9 9I6 8I7 9H8 8G9

13: 6D7 5D6 2F6 5G9 8F1 7E2 9I6 **a27 a32** 8B2 **a58** 1D8 **a89 c2r cEc f6b q43r6** 1G6 4G1 5E1 4E8 5I3 4A3 7G3 8C3 9D3 **bIc8 b8r8 i28 t9Ar uAEGc4** 9B8 7F8 9F7 7C7 **d1b** 8A9 7D9 **e71r5 pAEGc4 c6b s78** 1B5 3B9 3C6 1E9 3E7 1A7 3A1 1I1 4B6 6A4 4H4 2G4 3D4 2E5 3H5 3I2 5H2 6C2 2A2 2C8 5A8 5C5 6G5 6H6 6I8 7B4 9A5 9E4 8D5 8I4 7I5 8H8

14: 1B9 1A5 6H5 7C6 9C4 9B5 4C5 5F5 8A7 7G7 2I7 1H6 **a22 b1r8 c1r a21 bIc1 bIc4 p359r3 u934r9 cDc h14 r4F** 5D3 **c9r cEc h89 r2H** 9H1 7H4 **a71 qIEc2 eIAc2 cGc h14 d6b o6D4Br r2G** 6G9 4D9 6D7 4B7 4F2 1D2 1F8 5E6 6F4 3D4 3F1 6E8 5I2 6B2 6C3 3A3 2A8 2C1 2G3 2H2 3H8 3I9 5A1 6I1 1G1 1I4 5G4 4I6 9A2 8D1 7B1 8B3 7F3 8E4 8F6 9D8 9E9 8G2 9I3 8H9

15: 5F3 7H8 **a56 a59 a91 q85r9 a49 u419r3 uDCIc5** 8E5 7I5 8C4 **a96 bIc4 d1r** 2A7 2G8 8G7 6I7 5E7 1F7 2F6 1I6 4E4 6E6 5H4 1E2 3F4 9D4 7D7 9C7 9B3 **cBc** 5C5 1B1 **c4r c9r s88 t6Ar e41r3 fAc v2358r2 t4Hr** 6H9 4D9 6D2 5A2 5B9 4A6 4I2 5G6 7C2 7A1 7B6 8A9 9F2 7F9 8H2 3G2 2B2 3B5 1D5 3D8 1C8 3A3 1H3 2H5 4C3 6C1 6A8 4H1 6G3 9G1 9H6 9I9

16: 2E3 2F4 1C4 3H3 6C3 5D1 4H4 9A4 7D2 9H1 9G3 5I3 7G4 8I6 1G6 1H2 **a37 cEc d9r bIc9 e74r5 a35 q93r5** 1E5 3D9 8E9 3C6 **o4C2Ac** 2B1 4A1 **s38 t4Er u617r8** 5A8 8H8 7I5 9D5 4F5 8A5 3B5 3A7 7F8 6D8 **b5r7 p149r9 r4E** 4C9 6A2 2C2 1B8 2A9 2I8 2H7 2G5 1I9 5G2 4E2 6F6 4B6 6B7 5F9 5E7 6H5 4I7 6G9 9C8 9B9 9E6 9F7

17: 1A1 1B4 3D1 4C5 5D2 6F4 9A4 1H2 1I7 5E7 9G2 7G1 9D7 **a69 a79 a96 a97 c7b** 7C9 **b1r9 d8r a83 q57r8 u379r3** 1D3 **p268r3 t3Ir uDAGc8 uHAGc8 v1579r8** 3B8 2B9 2A2 3C3 1C6 2H3 2G8 3G6 3I9 6A8 6B3 4B7 6G9 6H7 4H1 6E1 6D6 2F6 2D5 5F5 4D8 4F9 1E9 1F8 6I5 5I8 7B2 8A3 7A7 9C8 9F1 7F3 8E5 7E8 9E6 8D9 9I3 7I6 8G7 8H8

18: 3B2 3G5 3I6 5D2 8F5 1C6 1B8 7C8 7B5 6C5 9B3 7D1 **a74 a44 a77 a86 a88 b1r4 d5b fEc** 8I3 **o1E7Fc q52r7 a17 c3r r5C r5F r9I uHAFc1 a31 cIc uIAEc9 eHDc9 a49 t4Gr d4r h68** 4G6 6F6 4F8 6H8 2I8 8G8 9E8 8E6 9A6 9D7 9I4 **r4D** 5F7 3E7 4D9 6E4 1F4 2F1 3F9 2B9 2C7 3C4 1A1 3A3 1E3 3H1 2H4 5C1 4B4 6B7 6A9 6I1 6G2 4H7 5I9 7F3 8D4 7A4 8A7 7E9 7I2 7G7 8H9

19: 1A4 2B5 2A1 1F5 2G6 4C5 4A9 6A6 6E4 5B4 5G9 9E6 4D6 5I6 9G4 9H9 9C1 7I1 7G5 6I5 4F1 6B1 **a17 a18 a33 bIc3 p148r2 fEc q16r8 a68 r1D r2H u735r7 uBEIc7 u935r8 a78 r7A** 8B3 **e86r7 c7r eIBc7** 2E7 **o6H1Gc r7H** 7A7 3C7 3A8 4B7 5C8 4E8 6D3 3E3 3D9 5F7 4G3 1I3 2H2 1E2 1D1 2F8 1G8 4I2 6G7 6H8 9A2 9B8 8E1 7F2 9F3 8D7 7D8 7E9 8G2 7H3 9I7

20: 6B3 2C3 9A8 9B9 4C2 **a31 a45** 2B5 2A6 1A2 2F2 6D2 6E8 1D8 7B6 8A1 **b7r5 c3r** 3B1 1I1 **cDc dHc q18r3 d9r k546 q36r9 r1G o3I8GC t7Gr** 9C4 8C5 9D5 8D6 9G6 4I6 **u815r7 a97 r2E** 3F3 2E9 1G3 2H4 3I9 8G9 6H9 4F9 4E1 8H7 **e43r7 s58** 6A5 4G5 7I5 **u518r4** 6F4 4D7 1E7 3A7 1B4 3D4 4A4 5B7 6I7 8E4 9E3 9F7 7F1 9H1 9I2 5H2 5G8 5I4 8I3 7G4 7H8

21: 2D2 2F4 3H9 8I2 4B2 5I4 1B4 4I3 1I1 3I5 1E5 4F5 6G5 4G9 8H5 9H6 7H4 7G1 2I8 6D1 8F1 **b3r7 h67 p167r3 t9Fr u438r6 q35r6 a56 t5Fr r1D c5r r5D e53r8 o5F7Ec** 9E2 7C2 **r8B r8D** 8G3 7A3 1C3 3B8 1D8 3E6 3F7 5B3 6E3 5D6 5E9 6A9 6C4 4E7 5F8 5H7 4H1 5A1 9A4 9F3 8D7 9C7 1A7 2C6 1G6 2G7 4A6 4C8 8B6 8A8 7E8 9G8

22: 5H3 7E2 8I7 8H4 7H9 8F1 **a75 bIc5 cAc** 9I8 9A3 7D3 **cGc** 7G1 **f2r** 2F7 6D7 5B7 **dBc h38** 4B3 2C3 2B8 5A8 8A6 **q61r9 s68** 9D6 7I6 9G5 4I5 5F5 5G6 7C5 8C8 7F8 4E8 6H1 3I1 **c2r h56 o3B1Hr s58 a42** 3C7 1G7 **eGdc4 uBEHc6** 1C1 4A1 6B9 **r1E** 6E6 3F6

1B6 3B5 2E5 1H5 2H6 4C6 6C2 4D4 1E4 2A4 3A2 1A9 3D9 2I2 3G4 4F9 4G2 6I4 8D5 8E9

23: 4B4 7I1 9D8 8D5 9H5 1G5 3A5 6C5 3F1 8B2 6G7 **bIc3 bIc8 q25r4 r8H 8C3 a77 i78 a52 fDc a53 9E7 5F7 8H7 1I7 8F9 c5r e52r4 t1Dr u347r9 u215r9 c3r dHc d1r c2b dIc eGDc3 p347r9 r2G 7G9 9I3 2G3 1F3 3B3 1B8 2D4 1H4 3H6 1D6 2C6 2A2 1A9 1C1 3E9 3I8 2I9 5C2 5A8 6E4 4E3 6A3 4A1 4C7 6D1 4D2 5D9 6I2 5I4 4G6 6H8 4H9 7A7 7C8 7D3 7F4 9F2 7E6 7H2**

24: 1B1 3D3 2H1 3H9 1E9 5A9 6F1 9F9 8C9 4E8 3F8 1C8 **a27 3C7 a52 a54 3B4 a12 6C2 a55 bIc5 q75r3 a63 5B6 9C6 8B2 g9b q62r5 a15 cAc h35 4C3 2A3 2C5 6A5 4A4 4I5 3G5 cGc h26 o2G8Ic q18r4 u726r6 p138r6 r7F r8G 9H4 6G4 1I4 1G7 3I2 1A2 3A6 2G6 1D6 6H6 7E6 9G2 7F2 5E2 5D5 5F4 2E4 2F7 8D4 9E5 7B5 9B3 8E7 9D8 7D1 9I1 7I3 5G3 5H8 5I7 8I6 7H7 8G8**

25: 2B1 8A6 6A5 4H5 4B4 6G4 **a77 a98 cFc 3C4 2C6 c4r c4b 5C3 h89 c5b cDc o3F1Hr o7F9Ir t2Gr qECc2 u167r7 u235r7 p167r7 cEc d9r c8b e91r2 h47 2F4 1E7 3A7 1C2 2E2 2D5 3F9 1D1 2H7 2G8 2I3 1H9 6B7 5A2 6E1 5D7 4E9 6C9 4C8 6F8 5H1 7B2 7C7 9C5 9D2 8D4 8E5 8F7 9E8 7G3 6H3 4D3 6D6 6I2 3H2 4G6 3I6 3G1 9F3 7F1 9I1 8G2 7I5 8H8 8I9**

26: 3B9 2F3 2H5 6E3 6H9 5H7 6D7 3E7 2C7 9F7 6C4 6A5 6G6 9A9 8E5 7C5 7B3 4C3 4B2 9B4 4H1 **a46 a94 h16 p139r1 qBGc2 t3Ir d1r u725r6 uFAGc8 v2457r6 q38r6 9I1 2G1 8A1 5B1 5A6 2A8 1C2 3C1 2B6 1D1 2D2 1E6 3D8 1F9 3I6 1I8 1H4 5G8 4F8 4D6 5D5 5F4 5I3 4I5 7A2 8F2 7D4 7F6 9E8 8C8 9C6 8D9 9H2 8G3 8I4 8H6**

27: 2A8 3H1 8I8 9I3 8E3 3F3 2F6 8G6 7G9 8D9 2E9 3A9 **a22 a37 a81 fDc a51 b6r5 c6r uBEGc7 d4r 4I9 5B9 e84r2 o3C4Bc pBEGc7 q47r5 t8Ar 9A7 7H7 5A3 1C3 a95 9E1 1D1 2D2 5F1 eDCc4 e53r5 2I4 r3C 2B5 6A5 6B1 8A1 7C2 4A2 6C4 4C8 4B6 3C6 1B7 1A4 3D7 1E5 3I5 1I6 1G2 2G7 5C7 4F4 5D5 4E7 6D8 5I2 4H5 8B4 9F2 7D4 7F5 7E8 8H2 9H4 9G5**

28: 1I5 9D5 7H4 9F8 4D8 9E4 9I3 6G3 4G4 4H9 9B6 7I6 5A5 6A2 6C8 4I2 5F2 1E2 3G2 7A8 8E6 **a21 a49 b3r9 bIc7 bIc7 c6r q62r4 r1G 1A7 2A9 1G9 h18 2G8 8H8 8G1 o1F2Hr uFBHc7 dDc e62r4 uBDHc1 uCDHc1 a41 o1C2FR pBFHc7 r2I 2D3 3F7 3D9 1D1 2F4 1C4 3C6 3B5 2B1 1F6 3H1 1H3 2H6 2I7 6B4 5B9 4C7 5C1 5D4 6E7 4E1 6F9 6I1 5H7 8C5 7C3 8B7 8F3 7D7**

29: 3G5 2H8 1I6 6H5 5E5 4H6 8A5 8B9 7F5 9F9 8F8 7I8 9C8 5A8 6A9 8H3 9H2 5I9 3I3 **a32 a91 c1r cDc 7D1 c8b d2r a13 s78 7B3 a74 a77 p359r7 q14r4 eFAc4 u678r7 4E2 6I2 8D2 8E6 b6r7 cFc o4C6Gr r4A 4I1 5G7 4A7 3B7 1A4 2A3 1F3 3D4 2F7 2D6 6B4 6C1 2B1 1C2 1E1 2E9 2G2 1G9 5B2 4C3 5C6 5D3 4F4 6F6 6E7 6G3 7E4 8C4 7C7 9D7 8G1 9G4 8I7**

30: 5G7 5H3 4F3 6I4 6G5 7C7 8I7 8B3 5E1 6C1 4C2 4E7 1D7 7I8 2I6 **a48 a99 o8A9DR u429r4 uAFHc4 uBAEc6 a76 4A6 dCc p249r4 r3G a25 3H4 m1r fFc h28 qAIc2 8F2 6D2 1E2 3F6 1C6 3C3 3D5 2G2 1I3 1H5 1G8 3G9 5F5 4B5 5A4 4D4 1F4 2D9 1B9 1A1 5C9 5B8 2C8 2B4 6F8 9C4 8A8 9E6 7B6 9B1 8D1 9D8 7F9 7H1 9H2 9G3 9I5 8H9**

31: 2C8 1B9 8A8 **a11 1G1 1H8 a13 bIc1 cFc 5F4 dCc mDc 7E2 7C1 8C7 a22 q76r9 r5D t9Dr u618r3 uCEGc3 uHEGc3 v1368r3 dAc a49 h13 6A1 3B1 3A3 6F3 2E3 2D1 2F9 3D6 3E4 1D7 1F2 1I3 4E7 8E1 8F6 9G3 8B3 h49 9I6 2H6 2I5 r5C 6H7 7G7 3I7 3G2 8I9 6G9 4G8 6D8 9D9 7A9 4C9 5C3 4H3 4I4 6I2 4B2 4A6 6B5 5D2 4D5 5H5 9C2 9A5 7B6 9B4 8D4 7H4**

32: 2H2 6A4 6H1 4H3 6C3 7D2 7G1 9C1 3B1 1E1 1F3 9E3 8A3 8C2 5A2 4I2 5B6 7C6 8I4 3H4 7B5 9F5 4F6 **a77 a88 bIc7 c6r s48 4G5 6D5 5E7 6I7 2E5 u157r9 q43r9 eECc9 p268r9 t3Cr 3A5 1I5 5I9 5H8 r1H r3C o3I1DR 1G7 r2D 6B8 4C9 1A9 2C8 3C7 2D7**

2F4 3E9 3I8 1D8 3D6 1H6 2G9 4E8 4D4 6F9 9A8 7A7 8B9 7E4 7F8 9I6 9H7 8G8 7H9

33: 3F6 2F4 1F7 1E8 3A8 3B4 6A4 5C7 4I6 4H2 9E2 7H4 3H7 4F8 4B9 2C9 4A1 6B3 4E3 2D3 2E5 1B5 7B6 **a12 a32 fGc q38r1 eICc1 f8r q37r3 t8Hr uHAFc5 a65 cHc p357r3 dGc q59r9 eIFc9 o8H9FR r5I** 3I1 2B1 2A7 1A2 3C3 2G2 1H3 1G9 5I9 6D9 5F5 5G3 6H5 6G1 5H8 8C1 7C2 9A3 8A5 9B7 8F3 9F9 9H1 8I2 7I3 9I5 7D5 9D8 8D6 9G6 8G7 7G8 8H9

34: 3H8 3G4 2E4 2I9 6B4 8D4 8F9 9H4 2F2 1C9 3C7 3I3 1D3 7G3 7I1 **a36 a26 eICc2** 9G7 8A7 **o9C7Dr q36r1 o5F6Hr** 5H3 6A3 **b6r1 o5E7Dc s88 r1E** 3D6 **bIc5 q37r5 eFAc5 cBc h68 o7B9Er r6D qGEc2 a52 u527r8** 6C8 4A2 6I2 4H5 6D5 6H7 5F7 4B7 5G6 1H6 1G2 4G1 9C2 7B8 2A8 2B6 9A6 9B9 5A9 5B1 3A1 1B5 1E1 3F5 6F1 6E6 4D9 7A5 8E5 7D2 5E2 5D8 7F6 9E8 8H2 9I5

35: 3D6 7D7 7H6 8I9 8F2 6F6 1F4 1E1 2E9 2D8 7F1 9G1 3A9 9D4 **a98 cBc c8b d1b** 3I3 3H1 6I1 **a67 cBc h68 c8r qCEc2 q24r5 s68 u635r4** 4I4 3G4 2B4 3C2 6B2 **t4Cr a48 fCc e42r5 o4H1Gc r1G** 6G8 7I8 1H8 1G9 2H5 2I2 1I7 2A7 5G5 6E5 4A5 4C8 4B6 5B9 5A1 5E4 6C4 5C7 5D3 5H2 6H7 4H9 8B1 9C6 8A8 7E3 8C3 1B3 1C5 7B5 8D5 8E6 9E8 7G2

36: 8C5 9D3 2H7 1F7 6D7 6G5 2D5 4F5 3H1 7D1 9G1 9I7 5G7 5F1 **a64 a54 a24 a66 a72 b9r4 q51r3 u915r8 uGDHc8 u748r9 p359r9 v1569r8 a78 d7r c9b r4B** 1A5 3I5 8I2 7I9 8G6 4I6 9E6 3F6 3D4 1E8 2E1 1C1 1B4 2B3 2C6 1I3 3G8 2G2 5C3 4D8 5E9 4B9 6E4 5A4 4G3 4H4 5I8 9C4 7B6 6A6 7C2 3A2 3C9 6B2 6C8 9B8 9A9 8D9 7G4 8F4 7F8 8H8

37: 6G1 1H1 1I7 7C6 8C1 8A8 8H7 7I8 7G3 5E1 7H4 **a64 a72 a74 bIc9 bIc5 dEc d2r b2r9 f3r** 3D1 7F1 7D2 **fCc h89** 3F9 1C9 3C8 1E8 4F8 **bIc4 eHEc6 o2C3Gr r4E o4D6IR r6I r8D r8I t5Ar qEAc2 c3r bIc5 uFAGc5** 1D6 3B6 2H6 2I9 3I2 4E6 5F2 2E2 4C2 5I6 4I3 6I4 4D4 4H5 8E4 9E3 8B3 1A3 1B2 5C3 6C7 5A5 2C5 3A4 1F5 2F4 1G4 3G5 6D5 5D7 6E9 9A2 9C4 9B5 8D9 8I5 9H9

38: 2F9 3F8 1F1 4D9 4G8 7F3 9D6 3E6 3D2 8E2 9F4 8D5 **a25 a34 c7r** 7B2 **fCc h69** 7H9 8C9 7C6 8G6 **dHc uBEHc4 o8B5CC** 6C2 5H2 6H6 5F6 6F5 2C8 **a11 a45 o2B4Cc q24r7 o5D6IR p468r4 r2G** 9B8 6A8 **a47 r3C** 3G4 **c5r r5C** 2B7 4C7 **r4E** 3I5 1A5 1C4 3C3 3A1 2E5 2G3 2H1 6I3 4B3 6B4 5B5 5C1 5D3 1E3 1D7 4E4 6E7 5I4 4H5 5G7 8B1 7A4 9A7 9G1 8H4 7I7

39: 4A8 9I2 6B2 6C5 8B5 6A9 5F9 5E5 3C9 **a44 cIc** 4I7 **d9b** 3I4 **d3r fFc** **h18 h58 c1r h36 q93r7 eEBc7 cDc r8G** 3E7 8D7 9B7 7B9 9H9 4G9 4H5 1G5 3F5 1F8 2G7 1C7 2C2 1E2 3H8 7F2 8I8 8H1 1I1 **u536r3 pBDIc3 r5C** 5D1 2E1 4B1 5C4 2D4 **s58** 7E6 8C6 5B6 1A6 3B3 2F3 3D6 1H3 2H6 4C3 6D3 4F6 4E4 5I3 6I6 9E3 7A3 9A4 8F4 8G3 7G4

40: 2E9 4G7 6A7 6C8 3A8 2A1 1I8 6I9 7B9 7E7 7D1 8D9 9G9 7G8 8G5 7A5 6D6 3E6 **a74 a83 d4r cEc** 8E8 5F8 **q61r1** 3G1 **r2F s78 r1H r2G u912r4** 8F3 **a84 o9H4Ic b4r2 r1H a72 p367r2** 2F4 9E4 4D4 4E5 9F5 1D5 3D3 **dBc r9H** 1H4 3B4 1B7 3F7 1E2 1F1 2G3 1C3 3I2 5E1 6F2 6H1 5G2 9A3 7H2 7I3 5H3 4B3 4A2 5B6 2C6 2B2 4I6 8C2 7C4 8A6 8I4 9H6

41: 1E1 1F6 6C1 7B3 9E2 7E6 8I6 8G1 4I1 2H1 5I2 6I3 3G3 2F3 1A3 5E3 7G7 **a54 a94 b8r4 eFCc7 q27r5 q96r8 t7Fr v1269r8 dIc** 2D5 4E5 3E8 7D4 9I4 **b2r9 o6D5CR bIc9 pCFIc9 r3C** 8C9 3C4 2A7 2B9 1B8 1H4 1I7 3F7 1D9 2I8 3I9 3H5 5C7 6A8 6D7 5G5 6B5 5B6 6H6 4G8 5F8 4F4 5A4 4A9 4B2 5H9 8A2 8B4 9A5 7C8 9D8 7F9 8F5 7I5 9G9

42: 1B7 4C7 5G7 7B2 7I7 9D7 9G9 1I5 2F6 2E2 9F2 2B9 3F9 3G6 4G1 7H1 2I1 **a11 a13 a55 b2r4 b2r8 eGFc8 fCc a46 bIc5 o4D1FC s78** 7D6 8C6 **r7C u438r8 d6r** 3C3 3A1 3B5 6C1 4A5 **p348r8 r7G r7F r9C** 6I4 8I3 **h36** 6B6 4B3 6A8 2C8 2A4 5A2 5B4 6D2 5F3 1D3 1E1 3D4 1F8 1G4 3H8 5D1 5E5 4D8 6E9 6H3 5H6 7C4 9C5 8B8 7F5 9E8 8E4 8D9 9H4 8H5 7G8

43: 6G8 4I9 8D6 9H1 5H6 5A9 7B9 7C6 6B6 8B4 9D4 7F8 3D8 3E9 2E6 3I6 6D9 9I8 1D5 3G5 **a97 c4r dGc a32 bIc3 e63r1 qGDc2 s68 pACHc7 a27 r8I 2I2 t3Cr u425r3 c4b r6E** 9C7 **a72 cAc r6H** 2A3 3C4 4A4 **r3F** 5F7 2D7 3F1 1B1 3A7 2G1 1G4 2F4 1I7 3H3 6A1 4B7 4D1 6H7 4G2 6C2 4C3 5G3 8H2 9E2 1F2 1E3 6F3 6E5 7A2 9A5 8F5 8I3 7I5 7G7

44: 2E3 7F3 8I7 8C9 7C2 **a71 eICc6 o5B4HR** 5A5 5C3 6G3 9H3 **bIc1 q61r7 uDFGc5 uEFGc5 a85** 4F5 **a52 a57 c8b** 8D1 8E4 **dGc d9b pAFGc8 bIc8** 6D9 **fI1 r4G** 8G8 9D8 8F2 1D2 2D5 9I2 **h78** 1A8 3B7 1F7 3F8 5H7 4G2 3H2 5E2 6E8 4E7 6A7 6C4 2B4 3A9 1C6 2C1 1E9 3E1 3G6 4B9 4A6 5B1 4H1 1I1 1G5 1H4 6I6 5I8 2H8 2I9 9A1 7A4 9B6 7E6 9E5 9G4 7I5 7H9

45: 1G8 4D7 5D9 5F8 6I2 5E2 5G5 7C9 7E5 8D8 **a22** 1C2 **a51 a69 a71 a83** 8G4 8E3 9G3 **a74 c4b** 5A3 4C8 3B8 4B6 **b1r3 fBc h59 fAc t3Hr uCEGc1 v1578r1 d3r b3r4 pCDFc4 r3H** 5H1 6C1 5B4 4E1 6F4 6E6 9A4 2C4 3C3 2F3 1E4 2D6 1A6 1B1 2A7 3D1 3F2 2G1 3H9 2B9 3A5 3I4 2I5 6B5 6A9 4H4 4I3 1H3 1I7 4G9 8A1 9D2 8B2 9B7 7D4 7F6 8F7 7I1 9H6 7H7

46: 1C4 5H5 9E2 4G4 **a85 b4r3 c6b** 6G8 **a38 d8r** 9I4 **b8r7 b8r9 d3b a32 c1b** 2B5 1E5 **b1r1 d4b fIc h78 p147r7 r6H uACHc1 r6B** 4A3 **bIc1 u518r6 v1356r1 d9r** 6A9 5C2 1A2 3C6 3D2 1F6 1D1 3F8 7D8 7F3 9F5 7A5 8A6 9A1 8I1 7H6 9H8 1I8 1H7 5G7 4H1 3G1 2C1 3B3 2E3 3E9 2H9 2I2 6B1 4C7 5F1 5D9 6D3 6E7 6F4 5E6 6H2 5I3 6I6 9C3 9B7 7C9 8E4 8D7 8F9 7I7 9G9

47: 1F6 2I5 3E5 4D5 6G5 5H6 8A5 7A6 8I6 3C7 **a27 a49 a92 p359r1** 7D7 2F7 7I2 **d6r e61r2 o6E8Fc q86r7 t2Er u925r3** 7G9 1H9 2H1 9C9 **a34 a14 cEc a28 a84 r1A r2C a78 o5C1Ac b6r8 r5C** 2C3 1A2 1B8 3A1 2A4 1E1 2D2 3F4 2E8 5C2 4E4 6B4 5D8 4A8 4B7 5A3 6A9 5F1 4F9 6E2 4G2 4H3 5G4 1I4 1G7 7B1 8B3 9A7 8C8 9D1 8F2 7E3 8D4 8E9 9G3 9H4 8H7 6I7 6H8 9I8

48: 2A7 3F6 6C9 5B6 6G6 7A2 7F9 2G3 9H3 2E4 7C3 1B3 1C4 3B8 8B4 5A4 7I6 7G4 4I4 **a11 a15 a68 c6r c8r** 9G7 1D7 8D6 9C6 **a29 s48 cGc** 5G8 **p249r1 a61 u439r2 c5r v2459r5 a25 fFc c4r eHFc2 r1F** 1I9 3E9 1F2 3G2 2I8 1E8 2F1 2D5 1G1 1H5 5E1 4D2 5F3 4F5 6A5 3C5 3A1 4B1 6F8 6E7 5D9 6H1 5H2 5I5 4G9 8C1 9B5 9E2 8E3 8F7 9D8 9I1 8G5

49: 3E3 2I1 1G5 6I5 8D5 9A5 1E7 1F8 3B8 2B7 3A4 2C9 1C6 7D7 4C1 8B3 6C3 8E8 7E1 6D1 8A1 2D4 **a42 d5r** 5F3 **b5r2** 7F2 9C2 7C8 9I8 5G8 5I7 9H7 3G7 **q84r4 eHFc4 s38 u629r6 q84r6 o6H4Br p269r6 r7G d4r cHc s38** 5A6 9B6 7B4 7A9 8F6 6E6 3D6 2E2 3H2 2G6 3I9 5D2 4F4 5E9 4G2 6B2 4B9 4I3 6G4 4H6 6H9 9E4 7G3 8H4 7I6

50: 3A3 1A6 3E7 2G6 7F9 7H3 8D3 6F3 9C3 7G5 8G4 1H4 2F4 7A4 5B4 4E4 6E6 9I6 4H6 5H5 5A7 9B8 **a28 a32 bIc9 c8r e85r1 fCc h79** 1C7 3B9 8B7 8C9 **o6H8Ic u478r2 u639r2 p478r2** 2B2 **e72r1 q24r5 a55 r7C t6Ar** 1B1 2C5 1F5 3F8 2D1 6B5 4D5 6D7 5E8 4F1 6A1 4C2 6C8 4A9 5I1 6H2 3G2 3H1 4G7 4I8 1G8 1I9 6G9 7C1 9A2 8E1 7E2 7D8 9G1 8I2

51: 9A2 8C8 7B3 9B5 8F3 8D4 8E7 7I6 7H8 9I9 6I4 7D5 **a49 a56 a57 cEc cDc f2r c1b fI1 fFc** 4G8 **bIc2 h18 dFc q63r3 u169r1 pDFGc1 g1r e51r3 t1Ar r3C** 3G3 1C3 2G6 1D6 2D7 1G2 2F2 3E5 1A5 3A7 3C6 1F1 1E8 3H1 2I5 1I7 6A3 4A6 6F5 5F6 4F7 6D8 5E1 4B1 4C9 1B9 2C4 1H4 2H9 5B4 5C5 6E9 6G1 5I3 4H5 4I2 5H7 9D1 7E2 9F8 7F9 8I1 8H2

52: 2B7 3D6 2E3 4D4 1H4 3F4 2H8 **a93 bIc2 d8r bIc3 fCc f8b gIc c9b o4H5Cr a41 q94r6** 5G6 9H6 7A6 4C6 5C3 4H3 9I3 7G1 **a79 b2r1** 5E1 **q51r9 t9Fr u437r8 r7I** 6I7 6G4 7I4 8C4 7C7 8F7 4E7 7E8 1F8 3B8 3A3 6C8 8B3 8G8 4I8 3I1 **a15 a22 b6r2 s48** 6A9 6B2

8A2 9D2 6E5 3G5 1I2 3E2 2G9 1E9 4G2 5F2 4F9 5I9 7D9 9B9 9C1 1A1 1C5 4B1 4A5 7B5
8D1 2F1 2D5 9F5

53: 5H6 8C4 8B6 8A7 9C9 9E5 **a83 c7r** 7E6 7F2 8I2 4H2 **dFc** 2E7 2F5 **dCc** 1B7
1C2 3C6 3A5 1F6 3F9 5B2 5C5 5G7 **dHc eDAc1 q51r4 r1A** 2C1 **bIc8 q86r1 uGBEc3**
v1259r3 r3B a61 t4Fr 4E4 1D4 3G4 3I1 5I4 7H4 7G9 4I9 1H9 **r8G s88** 7A8 3B8 1A3 2D8
3E3 2H3 1I8 4B3 5A1 4F1 6F7 4C7 6C8 5D3 6G3 6H1 4G8 9B1 7D1 8F3 8E8 8G1 9I3 9H8

54: 2C1 1C2 3A4 5B2 6D1 4H2 4I4 9H1 7A1 8E1 4A7 6I7 8G5 **a16 a39 a79** 1E9 **a93**
a96 b4r9 b7r6 dBc c6r mDc pBEGc8 fFc q15r3 6F3 a55 c5r e51r8 p237r3 r1I r1D
o1I3Er t9Cr t9Cr r4C a76 5C3 7B3 1A3 2B5 3B6 2E3 2D4 3E5 2F6 3D7 1D8 3H3 1I5
2G7 3G8 2H9 4F8 6B8 5A9 6A6 4C5 5D5 4D9 6H5 5H6 5I8 6G9 9A5 8C8 9C6 9B9 8D3 7F5
7D6 9D2 9F7 9E8 7E4 8F9 7G2 9I3 9G4 8I6

55: 1D4 5I4 9A6 9G5 3A1 **a25 a33 a43 a47 a66 b9r2 c6b dFc a58 f6r f8b g4r t3Gr**
u836r2 u534r8 6C5 4I5 4H6 1I6 1G3 4G7 6I2 4E2 7G2 **o1B7Ac** 3G8 6H8 5G9 6D9 5E5
2D5 **c2r q29r7 a87 q29r9** 7E4 8C4 8B2 9H4 **q37r9 eICc9 r7H** 7F3 4D3 5D8 4C8 5C1
5B6 2C6 3C2 1A9 1B5 2A8 2B3 2F2 1F8 2E9 3D7 2H7 3I9 6A3 6B7 4F1 7A5 8A7 7B8 7C9
8D1 9D2 9E7 9F9 7H1 8I3 7I7 8H9

56: 2C9 5F2 4H2 7C2 **a43 a74 bIc8** 9C4 **c7r fGc bIc1 bIc6 d2r a37 g6r a61 o7E1Fc**
t3Hr uBEHc5 8A5 9A8 7A1 8C7 7D7 8D8 2A7 3A3 2H3 2B4 **b4r7 c6r** 5G9 6G8 **h57** 6B7
5E7 6E5 5B8 1C8 **o3E8FC a86 q73r4 eGec4** 3H5 1B5 3B2 1D2 **r2F** 6F9 6D1 8E9 3D9
2F6 1E1 1F3 3E4 2G1 1I4 3G6 1G7 6H4 4I7 5I5 4C5 6C3 5C6 5H1 4G3 6I6 9F1 7E3 8F4
9D6 8I1 9I3 7G4 8H6

57: 7C7 9F4 7F2 9G5 8H4 7H8 **a81 a92 b7r9 m5r o5C2Ac q16r4** 4I4 5I5 8I2 3I6 **a69**
t9Dr u715r3 a93 7D6 4D5 2F5 **bIc8 c3r** 2G7 **dBc f6r h45** 3B5 1C4 3G4 2H1 3C1 6B4
6C5 8G1 9D1 9H6 5H9 2A8 5C8 6F8 **q14r6 eFAc6** 4C9 **r1A** 9A2 5B2 2C2 4A6 2B6 1A9
1F6 2E3 1G3 2I9 5A1 6A7 4F1 6E6 5D7 3E7 3D8 5F3 6G2 5G6 8C6 9C3 8B9 8D3 8E8 9E9
7I3 7G9

58: 6A4 7B7 7A1 4B1 **a21 a29 a53 a55 a73 a78 a79 dCc dEc f3r a26 a27 f3r g1r**
a36 c7r fDc h47 1G1 9H1 **p137r5 d4r qDCc2 a12 u528r2** 6D5 4D6 **a52 t9Gr uACIc3**
3B2 4A2 9I2 8D2 5E2 5F3 5D1 3F1 3D9 9E3 7D4 **a13 a48 cHc dHc t5Gr** 6B9 1A9 3A5
2A3 1B8 2D8 2F7 1E5 3E6 3I3 2G5 2H2 1I6 4C3 5C8 6G2 6H3 4H5 4G7 1H7 3C7 1C4 3G4
4I8 8B3 8A8 8C9 8F5 7F6 9D7 7E8 9F9 8H4 7I5 8G6 5H6 5G9 9G8 7H9

59: 6E3 5C3 5G7 5I1 8G3 2I3 4H3 9G6 3I6 2A6 1I4 4G4 4F9 **a52 a98 d2b j58 pAEFc8**
q73r1 cBc 6B4 **q72r7 q61r9 r3H u146r5** 2E5 8E2 **g1b a12 a14 f3r e73r1 r1G r3E** 7E9
9D1 3E1 2C1 3C4 2B7 3B2 2F4 3D7 1D8 3A8 1G1 2G2 3H9 6C8 5F8 5D6 6D2 4D5 5H2
6I5 4I8 6G9 7B1 8C7 8D4 8F6 7F7 9F5 9E8 7I2 9A2 7A4 8A5 5B5 1C5 1B9 5A9 9C9 9H4
7H5 7G8

60: 2G1 3I9 4A5 4E2 5I6 4D6 1E6 1F5 5H1 6F1 5F8 4F9 3F3 7I3 **a29 a33 bIc7** 8H8
7H4 9G5 8E5 **c3r** 9B4 **c4b dBc p259r3 s88 t9Cr** 2A3 **uABHc7 v2356r7 c9r h17** 9A1
8B7 5C7 1A7 1C9 2C4 3D4 1G4 1H3 3G7 4B3 6E4 6D7 2E7 2D9 5E3 6G3 4H7 9C3 8D3
7E9 8A9 6B9 6A8 7B8 3C8 3A2 3B6 8C2 7A6 9E8 8I1 7G2 8G6 9I7

61: 3E8 3G2 5A2 4A1 7C4 7A8 8A5 3C5 9H6 8B6 3A6 2G1 4H4 **a23** 4I3 7G3 5E3 **a79**
a85 bIc1 e42r7 d7r fFc q25r9 t8Dr uDBGc7 bIc7 cEc h17 7I1 8E1 7E7 8G7 5I7 **cIc**
q83r4 q83r9 r2F 5F1 **bIc9 flr v2358r9 r3D** 3B3 1B1 2C7 1A9 3D1 1F3 3F4 1D7 2F9
1G4 3I9 6A3 6B7 5C9 6C8 4C6 6F6 4F7 6E9 6D4 5D5 6G5 5H8 1I8 1H5 9E4 8D9 8I4 9I5
7F5 9F2 7B2 9B9 9G8 7H9

62: 2B8 5B9 4G9 9E3 7I2 5E6 **a57** 4H6 **a58 dFc a26 a29 q47r1 u635r2** 4F2 4E7 1F7
6D1 4C1 5D8 7E1 8B1 3B7 2E4 2D6 3H4 **b7r4 d3b eHBc3 t8Ar o9A7Fr cAc p167r5**

c9r 8F8 6I8 **b8r6** **h69** 9A9 7F9 9F6 7A4 1C4 **c1b** **r1H** 6H7 5I3 1H3 2A3 1B5 2G5 2I7 6B3 6C5 6A6 3C6 1A2 3D2 1D9 3I9 5C2 6G2 5G4 8C3 8A5 7B6 9C7 7C8 9D5 8D4 9I4 9G1 1I1 1G6 7H5 8I6 8G7 9H8

63: 5C9 4H8 7C7 3B7 1B9 1C5 1I4 1D8 9E8 1H2 8H5 **c3r** **a21** **e94r5** 7F4 **q35r3** **uCFGc1** 2A4 8B4 **a11** **a73** **c8r** **cDc** **h18** 3I8 2C8 3C1 **a31** **p358r3** **d2r** **q25r6** **cEc** **u758r2** **a82** **r7A** **d5r** **b5r6** **e85r2** **t4Br** **c4r** **dGc** **b6r3** **t6Dr** 7E2 9F5 6E5 5I5 4B5 6B6 6C3 4C4 5A2 6D4 4D2 5D7 5E6 1F6 2F1 3D3 2E9 1G1 2G3 2I6 2H7 3H9 4F3 6G2 5H3 4G6 6I7 9C2 9B3 7A5 8A1 8E3 9D6 7D1 8D9 9I1 8I2 9G7

64: 3G6 5D2 6F6 5I6 7B2 9C3 7E5 7F3 8G2 6I2 2C6 9F7 9A6 8D6 9D9 7G9 **a74** **a77** **u538r8** **uAFIc8** **v3568r8** **bIc8** **w1C8** **q71r8** 2A8 2H5 3C7 1D7 **b4r8** **d6r** **pCFGc4** **d5r** **r2D** 4D8 8E8 1F8 3H8 1G3 1I1 4H3 7D4 2E4 1C4 1A5 1B9 3E3 2B3 3B1 2D1 6B4 6C5 5B7 5C8 4A9 4F4 5G4 6G8 8A4 7A7 9G1 5H1 4E1 6E7 5E9 4I7 4G5 6H9 9I5 8H7 7I8

65: 1B5 5F8 8B3 8D6 8I8 7B8 5G4 6B4 4B1 6E1 9B6 **a52** **dCc** **a43** **a46** **a72** **c3r** **c3r** **g4r** **h18** **o2E1Gr** **uDAGc1** 2F4 4D4 **a21** **cFc** **i15** 3H4 3I7 6H7 6G2 6A6 4A3 5I3 **q49r7** **e75r7** **f7r** **r5D** 8H2 8F9 4F2 **t7Gr** **u147r9** 2E8 3A8 2A1 1D1 1E9 3D2 1C2 2C6 3C3 2D3 3G1 1I6 1G8 5D9 4C9 5A7 4E7 4G6 4I5 9C7 7C4 9A9 7A2 9E2 7D7 9I4 7I1 9F1 7F5 9H5 2G5 2H9 7G9

66: 4F4 2E3 **a22** **a26** **b7r9** 7A9 **bIc1** **cEc** 5D1 4H1 4G8 4C3 4A6 2H6 8G6 7F6 9F1 8F2 9A2 9G9 8E9 9E8 **cIc** **h57** **s68** 8A5 7D5 8D7 **a74** **a44** **bIc7** **c4b** 5C9 3B9 **uHBEc7** **cGc** **o6G7Hc** **q61r5** **a15** **r5G** 5B2 6B4 **o5H9IC** **pBEHc7** **r1I** 7I8 3H8 8C8 9C4 7B7 6C7 4B5 1C5 3C6 1B1 3E1 1E2 1D6 3D4 3I2 2I4 1A4 2A7 3G5 1G7 1I3 5E5 4E7 6H2 6G3 6I5 5H7 5G4 7C1 7H3 8H4 9I7

67: 1C9 6D9 4G9 2H9 9E9 4I8 4C5 6C1 4F1 8C8 9H8 7C3 7E2 8A2 5B2 6A3 6F2 6H4 6I6 7G4 **cIc** **d1r** 1A8 **e91r1** **h35** **o8E9Gr** **q18r5** 7D5 3D6 **e71r6** **o2I8Hc** **o9D8Ir** **u259r3** 1F5 **t2Er** **a24** **cEc** **p259r3** **r2A** 1B3 2A6 3A5 3B4 2I5 3H3 2F3 2E4 2D8 1D2 3E1 1G1 2G2 1H6 3I7 4A4 4B7 5F4 5D7 5E8 5G5 5I3 7B6 9A7 9D1 8E3 8F7 9F6 8I1 9G3 8H5 8G6 7H7

68: 3C5 1B9 5F5 8B7 9E8 9H5 7A5 8D5 9G6 7E6 8E9 6D9 9I9 2H9 5G9 **a27** **a74** **bIc3** **bIc4** **dFc** **o3G5Ic** **a67** 3H6 4B6 **q37r3** **a83** **cDc** **p157r2** **q15r8** **a48** 5I4 3G4 5E7 **cHc** **d4r** **k347** **d6r** **q84r1** **a51** **qHDc2** 6F8 4G8 **s28** **d1r** **cAc** **eHAc1** **bIc1** **r2A** 2F6 1C6 3D3 2A3 2C7 1A1 3B8 1D7 1F4 2I1 3I7 1I8 1H2 6C1 5B2 6A7 4C4 5A8 6E4 4E3 5H1 6G2 6H3 4H7 9C2 9B3 7B1 9A4 8F2 4D2 4F1 9D1 7F3 7D4 8G1 7I2

69: 1H5 5B7 6H4 7F5 6D5 4A5 6E8 5I5 9D8 9F4 7B4 7G7 9C7 7I8 4H8 1G8 3C8 5G6 **a41** **d8r** **f1r** **q83r6** **e72r6** **u157r1** **u249r2** **u538r3** 6G3 4I9 2G9 5H2 6F2 4C2 1B2 **i13** 6C9 **p157r1** **r8A** 6A1 6B6 **cAc** **h47** **cDc** **q93r1** **w2E1** **r3F** 8F9 1E9 9B9 3A9 2C6 1C3 3B1 3F6 2E3 2D2 1F1 2H1 3H7 1D7 2A7 1A4 3D4 3I3 2I4 5E1 5F3 7C1 8A6 8D1 9E2 7E6 9I1 8I2 8H3

70: 8I6 9A5 8H5 4B5 6B6 3A6 4E6 1D6 9B7 **a49** **a53** **a63** **a78** **c9r** 7H9 4C9 **f6r** **a67** **bIc1** **q18r3** 7G3 9G2 9D3 **t7Br** **u547r1** **v4579r1** 8B3 3C3 1E3 **a17** **p157r2** 8F7 3E7 1G7 **r2A** 8E2 7F1 8C1 5B1 4H1 5H3 4F3 6H7 5A7 2C7 1B2 2D2 6C2 5F2 5I4 1H4 7A2 7B8 2A8 9I1 9H8 2B4 3B9 1F9 3F8 3D4 2E1 3G1 3I5 1I8 2G9 6D1 6F4 6E8 6G5 6I9

71: 4C7 6E2 4E6 6F8 7E8 9F7 7G7 3E7 6I5 **a43** **a66** **a81** **a85** **d9b** 9G2 **d9r** **fHc** **a33** **g8r** **g1r** 2A1 **o6B7Ac** **q69r9** 8H3 7D3 4F3 9B3 5C3 8C2 9C5 9A8 2C8 1H8 2H7 1B7 1A2 5B2 **q82r4** **eGBc4** **u359r1** **u269r9** **pBHic9** **r2G** 2E3 1I3 1F4 2G5 3I4 2B4 3C9 1D9 1E5 3F1 1G1 3G6 2I9 4D1 5F5 4A5 6B9 5A6 5H1 6H6 4G9 7C4 8B6 7A9 8E1 8D5 8F9 9I1 8G4 7I6 9H9

72: 5I6 **a14** **a21** 5D1 5F5 **a52** **bIc5** **cBc** 3A4 9C3 5A7 6C1 1G1 3F1 **bIc2** **i25** 2D7 **q72r9** **t2Cr** **q38r6** **u267r8** **t3Ir** **r3E** **o2F3HR** 7C6 9D6 7I9 **a79** **cHc** **c7r** **cGc** **p267r8**

f9r a84 h89 9E9 8B9 9B8 7F8 3E8 1F3 2F6 3I3 3H6 1B6 1C5 3C7 2C9 3B2 2I8 2G2 2H4 1H9 1I7 4C2 4B5 4H7 6F7 6D2 5E3 6B3 5B4 4E4 4I1 6G8 6I4 8D3 9F4 8F2 7D5 9A5 7A2 8E7 9H1 9I2 7G4 8I5 8G6 8H8

73: 5I5 7F5 9G1 8G6 1B6 5A6 5B8 4B1 6B4 8C4 7E4 **cBc c8r o8F9Ir t5Cr eECc3** 7H3 9C3 8D3 5E3 5F1 2E1 8I8 7A8 1I3 **a59 fGc h57 u178r2 pBFGc2** 1E9 **uCFGc7 a47 c1b q52r9 eHCc9 r2F** 1F2 2F7 3B7 2A5 3G5 1G7 2G8 5H7 4C7 4A2 2C2 3A9 3I2 2I4 3D4 2D6 3E8 3H6 2H9 6A3 5C9 4F4 4D9 4G3 6G9 9B5 9A7 9E2 9D8 8F9 7B9 8B2 7G2 9I9

74: 1H6 1G5 3E5 3F9 5B4 8I4 3I7 5H7 4C7 4A5 3A1 5C1 **a38 a46 c5r c8r cCc e51r3** **h68** 6C6 3B6 3C8 4B8 **qFBc2 r7I** 2G8 6H8 5G9 4E9 **s48 o9E1Fc** 8F8 8E7 2D7 **e62r2** **p489r3 c7r u948r2** 7I2 4G2 6E2 1D2 2B2 1A3 1E8 1F4 2E1 1I1 2H3 5A2 6B3 4F3 5D8 5E6 5I3 9F2 8C2 9C3 7F1 7E3 9E4 7D6 8D9 7B9 9D5 8B5 9B1 8H1 8G3 7H5

75: 3F5 3E3 4C7 4A8 5D2 9A2 8E2 8D8 9D5 6A9 4E9 2C4 8C5 **a27 a43 bIc7 cEc d5r** **q17r1 t2Ir u845r3 dGc u368r6 f2r a31 pBEIc1 c8r g9b a99 p458r3 t4Fr c5b c4r** **s78** 8G4 9E4 4F4 6E1 4H1 6H4 5B4 4B3 6B5 4G5 6I6 5G3 6D3 5F7 2D7 1D9 2B9 3B2 2F1 1G1 2G2 3H6 1C6 3C8 2E6 1E8 3I7 2I8 6G7 5H8 5I9 8B6 9B1 9C9 7C3 7D1 8F3 8I1 7H2 9I3 7G6 9H7 8H9

76: 2E2 4A1 6C2 7B3 7A7 8E1 2H1 3F1 1H7 3D7 4F7 **a23 a29 a75 f5r gGc q82r4** **u428r6 v2458r6 bIc6 cCc** 3C9 **uEACc4 uFACc4 bIc4 r5D** 8D4 **a86 b6r6 r9A f6r** **t5Er** 5D6 4C6 5C3 6F3 1E3 4I3 3G3 6I9 **bIc5 h56** 7H5 6G5 6H6 8I6 1G6 2B6 9A6 7F6 7E9 4D9 1F9 2F4 5B9 6A4 1C4 3B5 1A8 2D8 1D5 2I5 3I8 4B8 5E4 6E8 9B4 8B2 9C5 9F8 9G2 9I1 5G1 5I7 8G7 7G8

77: 1B9 3I7 8C1 9A6 7C7 1E2 **a39** 3E9 **bIc8 o7A2CC q73r5 q63r8 uFCHc5** 2E4 **o7I9Br f9r** 7A5 2C5 2A2 **qGDc2** 6G2 **a63 e95r2** 4F6 2D6 5I6 5H4 5A1 **p129r3 c8b** **q58r7 d9r** 2H9 **e96r7 r5D** 5C2 6A8 1C8 3A3 4B3 4D2 5D9 5F8 3D8 3F5 6E7 6D5 6I3 6H1 2I1 1F1 2F3 1G3 1H6 2G8 5G7 4I9 7B2 9C3 9B8 8B4 9F2 8D3 7D4 9E5 8F7 9I4 8H5 8G6 9H7 7I8 9G9

78: 3F3 7E6 9A8 **a49 bIc6 bIc8** 2B8 **dBc a75 d3b a35 b5r5 c6r f3r h16** 8B6 3C6 3B1 **o9I4Gc c7r cCc qGBc2 t2Cr uBAIc3 uDBGc4 uDGHc4** 3E8 1G8 3G7 1E5 2I5 **b2r2 v2569r4** 3H4 1I2 3D2 7A2 2C2 1B4 2F4 1D7 2A7 5C4 4C7 4A9 1C9 1A3 5A6 6E4 5F7 5D5 6F9 4G4 4I6 5I1 8C3 7D4 7F8 4D8 4F1 8D1 8F5 9E9 7G1 9C1 7C5 7I3 9I4 9H5 6G5 4B5 6B3 6H2 4H3 8G2 8H9

79: 3C8 3E3 4G4 7C4 9E4 5F4 7I3 8B3 4A3 6D3 7B7 4E1 5H8 6F8 9D8 8G8 2I8 2G2 2B5 9G5 3H5 7H1 9I2 4H2 8C2 7G6 7F2 **t4Fr u368r7 v2579r9** 6B2 5E2 **q61r9 o3G1Ar** **p368r7 c5b r1C** 1G1 3B1 5A1 6G9 4I7 3G7 2D7 1A7 6E7 4D5 6C5 7E5 8F7 8E6 3F6 2E9 1C9 2A6 1I6 3I9 5B9 4C6 5D6 4F9 9B6 9A9 7D9

80: 2C9 2D2 3A2 2I5 9A5 9H2 7B2 4C2 4A1 8B9 7I7 3I6 3G1 8H1 9C1 7F1 1E1 7D9 8G6 9B6 **a17** 2H7 **a64 a98 dEc** 8I8 8E5 **h79 fFc s88 uCBDc4 q85r4 a44 o5D6CR** **pBCDc4 q85r3** 6C6 4H6 5D6 5H9 4E9 3F9 3E7 5F7 4B7 1C7 4D5 1F5 2F6 1A6 **r2A** 9I3 8D3 2E3 1D4 2A4 1B8 1H3 2G8 5A8 5C3 5B4 4G3 6F3 6E4 4F8 4I4 6H8 7A3 8C4 9F4 9E8 7G4

81: 3G6 2G3 3C3 1F3 8G1 7B1 4G4 6C4 5D4 4I9 9E6 8I6 7C6 1I4 3B4 **a82 a89 bIc2** **b4r2 cIc** 2H1 9H3 **g5b q71r7 uECIc7** 3F7 6F9 5F6 6B6 6D1 5I1 6I3 5E3 4E7 9F1 9D2 4F2 **eICc7 s88 o9B4Cc u249r5** 3A5 **p348r8 b1r8 cBc r2C** 8C8 6A8 1B8 5A2 5B7 4C5 6E5 2D5 3D9 2E8 3H8 1H9 2B9 2C2 1A7 2I7 4D8 6H2 5H5 8B2 9B5 9C7 7A9 8E9 7E4 8H4 7H7 9I8

82: 5C7 5E1 6E9 8C2 9D4 7A4 1E2 3H2 3B4 3G7 2F7 3C9 9B9 **a25** 6D3 3F3 5A3 **a71** **a78 cEc d9r h37 d8r uAFIc6 t2Cr t9Ar r6A** 8A8 3D8 3A1 9C1 **p148r6 s68** 6H7 8I7

9E7 8E3 9H3 4G3 1G1 2D1 1D5 7H1 **e96r5 q85r5 a65** 5B8 **r1H** 6A6 4C5 2B5 1B3 1C6
2C8 2I3 1H8 1I4 2H9 6F5 5F2 4F4 4E8 6I2 5H4 5G5 4H6 5I9 9A5 8B6 7E5 7F8 9F6 8H5
7I6 7G9

83: 5C2 6E5 6I9 9A3 7E3 8G5 9H9 6D4 7G1 **a41 cAc e43r3 eFAc4 f8r o8A9ER**
u189r2 d2r r2B 2E4 1A4 2B2 3E9 2C9 8A2 8B9 8C1 4B1 9E2 8F4 2H5 3I1 2G3 3F3 1F5
3C5 5D3 5E1 1D1 4E8 4I3 4H4 **a48 q28r6 a86 q28r7** 9D8 8I8 5G8 **l67** 1I2 7H2 **s88** 9C4
7I4 **s88** 3B7 3A6 1C8 3H8 4C7 6B6 6A8 5F7 4F6 5H6 2I6 1E6 2D7 1H7 6G7 7C6 7B8 8D6
8E7 9G6 9I7

84: 2A2 9F1 7I8 8C8 7C6 9B4 7A7 9A9 8G4 5I4 7D4 7E5 9I2 1G2 9H5 8H6 7H3 1B8
4A8 3A5 2I5 4D5 5G5 6C5 **a36 c4r c6b q42r1 q15r9 s58 uDBGc3 r1D t5Er uFEGc3**
bIc3 dEc 6B9 **h23** 6E2 4F3 6G3 4I6 3G6 8F2 8E3 **o3B1IR a27 eHBc7 r5C** 1C9 3B7 2B3
1D3 3I3 1I7 5C7 4B1 6F7 2E7 6D6 2F6 3F4 2C4 3C1 3E8 2D9 2H1 3H9 5D1 5F8 5E9 6I1
4H7

85: 3C7 2B8 3H9 6C2 7I6 3D6 3E8 3G5 1C6 **a14 a15 a79 bIc2 c5r fAc a71 a74** 7H2
d9b a97 fIc q75r8 uIEGc4 4H4 6E4 4A1 2G4 8H1 9C1 6G7 **c8r** 1E3 2E1 1G1 2I2 5I1
5G2 **o5E4Ir t8Fr c9r eDAc8 k794** 9D4 8I4 9I7 8A7 9A9 **s58** 7D3 8C3 6B3 5B9 6A5 1B5
1A4 5A6 4C8 4F3 6F6 5D8 5F7 2D7 2F5 4D9 1F9 1D2 5E5 4I5 6I9 7B4 7A8 8F2 8D5 9F8
8E9 9G3 8G8

86: 2E8 3H6 9D5 **a35** 5G4 6E4 5D6 6A6 9E6 7G6 8G7 **a41 a59 a63 c6b bIc9 dHc**
a94 fAc bIc2 d9r b9r2 h38 t1Ar u157r7 q53r7 a17 cAc c3r 3D4 **t2Fr uDAGc1** 4E1
6C1 1E7 2F3 1A3 2A2 8E3 7D7 **c7b dCc e73r1 pCDHc2 r1G** 1C4 2B5 2H4 1G5 4C5 6B2
5C3 5A8 3B8 3A7 4B7 5F7 6F5 4F9 4H2 3I2 1D2 2D9 3F1 2G1 1H9 6I3 5I5 6G9 8C2 9B3
7B4 7C8 8D1 9A1 8A9 7F2 7I1 9G2 7H3 8I4 9H8 9I9

87: 2G3 1D3 6D2 4G7 1I4 1H1 1A2 1C8 **a65 a68 cCc c6r** 6B1 4F1 4E8 **a69 cBc** 9B4
8G4 5E4 5G2 5I1 5H9 9G1 8C1 **f7r b7r5 h58 h28 d9b q68r3 a83 r6E dFc s88 d9r b9r7**
t2Hr cHc l28 2H2 3G8 2F8 6I8 6G5 7I2 8B2 7B8 8H8 **eFCc9 r2E r2I uADIC9** 2B9 3C5
3F9 3D4 2E6 2I5 3I6 3H7 7A5 4B5 8A7 7C9 7F4 7D7 9H5 8E5 8F3 6E3 5C3 4A6 6A9 5F6
4D9 9A3 9C6 8D6 9E9 9I7 8I9

88: 2E3 3H8 4F5 6D8 7D3 9A3 9H5 **a59 a64 a91 fIc a32 dBc** 9B8 7F8 7B9 **q28r4**
9G4 **t5Br u519r6 v1589r6** 8B6 7C4 **b2r6 c5r p258r4 f3r** 1B2 3D2 4A2 6B5 4B1 8D1
8F4 3E4 2B4 1F6 3A6 3F9 2F1 1D7 3C7 1C5 3G1 3I5 1I9 6A4 5C6 4C3 5B7 6C9 5D4 4E9
6E7 5I3 4I4 6H6 2G6 6I1 4H7 2I7 2H2 7E6 9F7 7H1 7I2 9I6 7G7

89: 2C4 5A1 4H1 4I2 9B2 8C8 5B8 6B5 6I4 5E4 5D5 7F4 5C6 **a43 a76 fEc** 1E5 **g3r**
1G1 **cFc p148r9 t2Dr o1B3Ir t8Er cEc u728r3 v2578r3 r1B** 3A9 9A7 7A5 8A6 9C3
4B3 2A3 3F3 3D1 4C7 6E3 6F1 9E1 7D3 9D6 1F6 3B6 1B7 2D9 3I7 1H9 4E6 4F9 5H7 5G3
5I9 8E9 8H3 7H6 2I6 2H5 7G2 3H2 2E2 3E8 3G4 2G8 9H4 9I5 9G9

90: 1A1 3G6 2C6 3C4 4C1 6B2 4B3 4A7 5A5 6A6 5D1 5F6 4G5 9B6 8B5 9E5 3F5 2H5
7D6 8D7 7C7 8H1 6G1 7E4 9A4 **o2I6HC u157r2** 3D2 **o9D8Ar uFCIc3** 5E3 6I3 **a59 c8r**
e61r4 pDFIc9 t7Gr v2469r8 bIc8 c7r r1G 7G9 5H9 1I9 3E9 2D8 1F4 2I4 1G8 3B8 1B7
1H2 3H7 4D4 4F9 6F8 5G2 6H4 4I8 8A9 7A8 8E8 9D9 9I2 8C2 9C3 7F2 8F3 7H3 9H8

91: 5I7 7G3 8G4 7E4 8I6 2H6 1H4 3B4 2F4 1G5 9I9 **a33 a91 a98 f4r fAc fCc o3E2Ir**
q91r7 3F3 1I3 2C3 **a27 a31 bIc1 cAc u716r9 a79** 7D7 1F7 9B7 4A7 3C7 3A6 4B6 7C6
6F9 **l19** 1D1 2A1 1B9 2E9 7B1 7A9 8D9 **qHEc2 a42 e62r2 r4F r8E s58** 4F5 6D2 3E2
2D8 2I2 4D3 5E8 4G2 9F2 8B2 5A2 8C8 6B8 5B3 6H3 5H5 6C5 5C1 6I1 3G1 3I8 4H8 9A5
8E5 9H1 9G8

92: 3I8 4A3 6F3 5E8 6C8 6B1 4B4 5G2 5I1 9A8 1I4 3G3 1E3 6H4 7I3 9G4 **a12 a35**
cCc e91r9 p568r6 a26 q37r1 a91 a81 uBCEc5 dAc r9B uBFGc6 4C6 5A5 4E5 4F2

6D7 5D6 6I6 8A6 1C5 **c9b h16 c2r f3r o9B7Dr q72r7** 3C7 3B2 1B6 3A9 2A4 3D4 2F6
2E7 3E1 2D2 1F9 2G1 3H6 8C2 9C1 7A7 9B9 7B5 8F1 7E2 8D5 9F7 7D9 7H1 9H5 2I5 2H9
4I9 4H7 7G6 8I7

93: 2E8 2H6 3H3 5E6 8G6 7I8 2I9 4B8 4A6 7B6 **a34 a35 a97 g8b q72r7 eFAc7**
u269r3 1D3 1E9 9F3 7D9 9A9 5C9 **a22 a84 cDc b5r2 bIc2 b9r2 i48 a31 dGc t1Ar**
q42r1 3C5 1G5 4H5 **cAc d4b v2479r1 b8r1 r2F** 3D2 8D1 **r7A** 6A3 6B5 7A5 8B7 2A7
3E7 2F1 1A1 1B2 3I1 3G4 1I7 4C1 5A2 5B4 2C4 2B3 6E1 4F2 6D4 5D8 5G1 6H2 4I4 6G8
9B1 8C3 7C2 8E2 9E5 7E4 7F7 7H1 9I2 9H4 9G7

94: 2A8 2C1 5A1 9B7 5B8 9E2 9D1 4E1 6I1 7D8 9I8 4G8 7A2 **a76 q58r6** 9F6 5E6 9H5
7G4 7I9 **a54 a57 fHc** 3I2 3E7 3B4 3C6 1C9 7B6 **a34 uFBIC5 v3578r5 bIc5 q62r5** 1G6
6H6 4H2 6C2 5H4 4D4 4F9 8I6 8H7 **e41r5 p147r3 r1E** 1I5 3A5 1B3 2F5 3D3 2E9 1E4 2H3
2I4 2G7 3H9 4C3 5C7 4B5 6F3 5D5 6D7 6G5 4I7 8A3 7C5 7E3 8E5 8D9

95: 3G8 1F8 2G7 3E7 3D9 2I6 4F7 7H9 9E9 7E8 9C8 4B8 9A7 8D6 5E6 4G6 9F4 6E4
2E2 4D2 6G2 7I2 8F2 **a61 c1r** 1H2 3C2 **a31 a33 q26r3 u726r1 cBc h45 pBCFc1 q67r5**
o8C4AC a45 b4r3 9G3 **r6F** 6B1 **e62r3 s88** 6F5 5D3 2F3 1A3 2C1 1D1 6C3 8A1 7B3 7C6
1B6 1C7 5B7 8C9 4A9 8B4 3A4 3B5 7A5 7F1 9D5 9I1 3H1 3I3 5G1 4H3 5H4 4C4 5C5 4I5
8G5

96: 3B5 3G3 6A7 8D3 6E8 8H8 4G8 2A3 **a46 cFc f4r dHc bIc1** 1G6 **c5r c5r h23** 5B3
4C2 5F2 4F3 **q71r8** 3C8 **r9H** 8I1 5G1 5I5 9G5 7E5 **s68 p589r6 c7b** 7B8 **uADIC2** 9B4
a72 h26 9E7 2F7 **r2H** 2B2 2H1 2E4 **e73r1 h47** 3H7 1I4 3A4 1B1 1A9 3D1 3E9 1D2 1F8
3I2 6C1 4D9 6B9 4B6 5E6 4H4 6I6 4I7 5H9 7A1 9C9 9F1 8E2 9A2 8A6 7D6 9D8 9H6 7I9

97: 1I2 4B9 8H8 7F8 6E8 1D9 2C8 1H6 **a42 a73 a91 a97 cHc cBc d5r f3r** 3E6 **a27**
c4r f7b h34 3F4 2D3 3H3 2H4 **e52r5 o4D8Fc q47r4 u367r5** 1E5 1F7 2F1 1C1 2I5 3G9
2A9 6G5 5F5 7I9 5I3 **cGc e74r4 p367r7 r9D** 9I7 7A7 3C7 3B5 3A2 6B2 4C4 6C3 5B7 5A8
6A1 4E1 4F3 4D2 6F6 6D7 5H1 6I4 4G6 4H7 8B4 7C5 9B8 8F2 8D5 9D1 7D6 8E7 8G1 9G3
8A3 9A6 7G4 8I6

98: 3I6 3H5 1H1 6C6 4G1 **a24 a28 c8r** 8A5 **d2r b2r4 dCc a73 c1r fFc** 7E3 **q47r5**
t5Fr 5E2 **r9E** 8F9 4F7 5F8 6F3 5I3 5G9 7I9 **a95** 6G4 2I4 **e82r7 t3Br q63r9** 1A9 1E4 **i23**
u714r8 uGBDC8 r9E 7D2 7G5 **p147r8 r9I** 4D5 6E9 3D9 2D8 3E7 1C7 3B8 3A4 3C1 2G7
1I8 4C4 4B9 4A3 2C3 2A2 6B2 6I5 4H8 4I2 9A1 8C2 9B3 8B4 7C8 7F1 9F4 9E5 8D7 9D6
9H2 7H4 8G6 9I7 9G8

99: 1E8 3I4 4F4 6A4 7C4 8B8 7G8 4I8 5D8 8I1 7E1 1I9 2F9 3C9 4A9 5H9 4H1 8G9 6I3
4D3 **a45 bHc5 cFc a82 i35 qCFc2 a62 r3D o2C1Hr t5Er u278r3** 1B3 1H6 2C6 6H2
a46 s77 r9B 5B6 5C1 9B1 **a42 b5r7 u915r7 pAEFc7** 9C3 2G3 3G2 1A2 3B7 2E2 3D5
1F7 2H5 4C7 4B2 6B5 5F2 4E5 6D6 5E7 4G6 6G7 8C2 9A7 8A6 7A5 7D2 8F5 7F3 9E6 8D7
8H3 9G5 7H7

100: 1D1 1F6 3D9 2D5 3I8 4F8 4G1 6G8 5C8 9C5 7A8 4C3 **a86 c5r d3r a34 b3r7 d9b**
fIc c3b 8G3 7F3 **q34r5** 5B9 6H9 **a45 l35** 3B3 1A5 1C9 1I3 3H5 4B5 5H3 5I5 8A9 **u826r4**
a74 bIc4 cEc p249r7 v1479r2 qHCc2 2I2 1H7 2A7 3C4 1B2 2F4 1G4 6B7 6A4 4A6 4D7
6E2 3F2 3E7 4H2 6I6 8C2 8B4 7B1 9E1 8F7 8I1 9G2 7D2 7E6 5D6 5E4 9D4 7H4 8H6 9I7

101: 2I5 4C5 6G5 8C8 8A2 8G1 8I9 4G9 6D9 6F7 6E4 **a74 a77** 4B7 5B4 5A9 3B9 **b2r7**
bIc3 bIc4 c7r 7H5 9D5 **a87 h47 c9r i18 p169r6 dIc q51r1 eFCc1 t1Dr f1r h34** 1D4
3G4 1G3 **d3r o3D2Br o3E9Fc u437r8** 5F8 5C1 2A1 3A3 1B6 2B8 3C2 1C7 1F1 2D2 2F3
3E6 2E7 3D8 3H7 1I8 6B2 4A6 5I2 5H3 6I6 4H8 4I4 9F6 8D7 8E3 4D3 4E1 7D1 7E8 9I3
9H4 7A4 9A7 8H6 7I7

102: 8E9 9I6 7H8 1H6 7E2 **a19 a74 a75 a91 b7r3** 9A7 8D7 **bIc5 cAc cEc d1b** 3C7
3B8 **o9G2HC q62r8 cFc uBAEc3 a43** 7A3 7B1 3A1 **c1r** 1D8 2G8 6F8 4I8 4B9 2A9 2B6

5B3 6B7 5H7 i14 8G2 p349r3 s48 t6Hr 6G5 5E5 6E6 5A6 6A2 4H2 h19 5G9 1I9 1G1 6H1
4C1 6C4 5D1 5F2 2D2 1F5 2C5 1C3 3E3 2F4 2H3 3G4 4D3 4E4 5I4 8F3 9D5 8B5 9B4 8I1
9G3 8H4

103: 8G4 9I5 1D8 3E4 2H9 3D9 2G3 1F3 9F7 a15 a97 a99 c9r 9E8 7C8 m6b o5F6Hr
6G8 3H8 o9D4Ec qGCc2 2D2 7F2 e72r1 t6Br uAEGc6 a76 t6Br g4r 8C2 8B7 c6r
3A2 dDc eDAc3 c6b h23 6B2 5A3 6A7 4C1 2B1 3B5 1B6 1C4 3F1 2E5 1I1 5C5 4B9 6D1
4E3 6F5 5F4 5D6 4D7 4I2 6I3 6H4 4H5 4G6 3I6 3G7 5H7 5I9 8A1 7B3 9B4 9A6 9C9 7E1
9D3 8D5 8E6 7I7 7G9

104: 3D5 1F6 4H5 8I7 5G7 4E7 1D7 2C7 2B5 2A6 1E2 3H7 6C6 5E1 7I6 8B6 7B2 4A2
a59 a94 c9r a93 bIc3 d3b r7H r9I o2I6GC u349r1 q61r1 eHAc1 u628r4 cDc h23
5D2 9F2 9D3 o6G4FR r6G 5F9 6A9 6H1 3I1 1A1 1H9 3B9 9I9 9G4 2H4 7G5 9C5 9B1
4C1 7H3 pBFGc3 uCDGc8 3A8 1B3 1C4 2E8 3E3 3F4 2I3 1G8 5C3 4B4 6D4 6G3 4F3
6F8 5I4 4I8 8A3 8E4 8D8 7C8 8C9 7E9

105: 5E6 4G2 4I1 7F2 6E2 5A2 3C2 5B3 8F1 4E8 9F9 6D9 6F5 3D5 a83 f2r 1I8 b1r3
p149r7 b3r7 s78 t3Gr q39r4 v1349r4 6C8 cCc 1A3 9D3 2C1 3E1 2E3 1G1 7H1 c3r c8r
cIc e76r4 r2B 1C4 2B7 2A8 3A9 2F4 1D7 3G4 2H9 4A7 6B4 4D4 5F7 5H4 6I7 3H7 3I3
5I9 9A4 9C7 7B8 8D8 7D6 8A6 7A5 8H3 7C3 8C9 7I4 8I5 2G5 2I6 9G6 7G9

106: 3G7 5E2 7F5 8H9 7E9 3A5 8A7 8E3 9E6 a53 a59 a88 b3r4 bIc3 d5b 4I7 d6b
4F3 6F9 flr a34 dGc q75r8 e84r8 r8G 8C5 9A2 6C2 8G2 1I2 1G5 5I5 4B5 5A8 4A9 4G8
8B8 7I8 q62r6 u135r6 e62r6 7C6 s88 a21 u267r1 v2679r1 r5B 9B1 7A4 7G1 1A3 3H3
2D3 1D9 2B9 1F8 3F6 3E1 3D4 5F1 4E4 5B4 1C4 2A1 1B6 1H1 2G6 2I4 4C1 6A6 5D7 6I1
6G3 5H6 9F7 9D8 9I3 9G4

107: 3B8 7A8 9D9 8H6 9H8 5G8 4E8 9I4 8B4 5C4 8A7 1D7 5A1 a19 7G9 a72 a83 c5r
d5b a56 e53r3 u258r2 a22 c3r cHc q39r5 uEAGc5 v3479r5 1C1 1I9 3E9 2D3 3H3 3I2
5E3 5H2 6G3 p479r1 8F2 2E2 cIc h67 q62r5 1E5 2F4 3F6 1H4 6E4 4F1 6F7 6H1 2G1
2H5 3C5 4I5 6A5 6B9 2A9 5I7 6I6 4D6 5B6 2C6 2B7 4C7 4B2 6D2 7C2 9C3 8E1 7F3 9F5
7B5 9B1 7I1 8G5

108: 1B4 2G5 4D4 6F8 6D1 8A4 8E9 7G8 6H5 4H9 6B9 4G1 5I3 3G3 1C3 3C8 2C9
1E8 1I9 3D9 8B5 4A3 a11 bIc6 dFc dHc a91 t9Dr uCDHc6 4B6 4E2 i56 a97 c8b s78
u268r7 pAGIc7 o2B3Hr r2A 3H1 2B1 1F1 qBHc2 7I1 8C1 8F6 3E6 2A6 3B7 3A2 1D7
2F2 1H2 2I7 5C2 6A7 5D6 5E5 6G2 5H7 9C7 7C6 9D2 7B2 9B3 7F3 9F4 7D5 7E7 8I2 7H4
9H6 8G7

109: 6C5 8B9 8C4 3A2 9B2 5B8 1A8 4B6 a41 a43 a62 a75 a98 b3r5 c7r 7A6 9G5
3I5 8A5 a73 a77 cIc a68 h18 6I8 8H8 8I1 k317 2C6 t3Gr uFAIc7 u537r9 v1578r7 4D2
2E2 bIc9 cDc h37 r2I 2A1 3C7 4C1 4A3 9C3 9A7 d2b c1r cEc q26r3 eHFc3 r5H 5E9
6E1 4I9 3G9 2D9 1D5 2B5 1B4 3F6 3H1 2H4 1G3 2F3 1E7 1H6 2I7 5D3 6D6 6F4 4F7 4E8
5G1 6H3 6G2 5H7 8E3 7D4 9E6 8D7 9F8 7F9 7H2 7G7

110: 2B1 3B4 4D4 6D5 7E7 7F9 2G4 a51 a52 a68 bIc6 bIc8 bIc9 d6r 4H7 bIc7 dGc
a33 f9r gIc o8F9Br pAFGc3 q72r8 d3r h89 r4F 4G2 6H1 1I1 3I7 1A7 3H5 4F1 6I9 5I8
6F8 5H4 9I4 9H9 3A6 4C6 4A5 8C5 8B7 6C7 7I5 c7r uCDIc2 5A2 6B3 6E2 5F3 5E6 7A3
9C8 2A8 7B2 9B6 8F6 7D8 1E8 3G8 1G9 2C9 1C2 3D9 8D1 9D2 9E3 7G1 8I2 2H2 1H3 2D3
1D6 2I6 8G3 7H6

111: 1C5 3A6 2C7 2A3 2E9 3H3 2H8 7B7 8A8 8G3 9B3 5C3 6D3 a21 a34 a49 b5r1
bIc8 c7r dDc a82 a86 q74r5 a55 s78 u617r2 u638r7 c4r a56 h46 o7H6Ic p167r2
r6E 6A2 4A1 4C9 6E1 5I2 4D2 4E7 1D7 1F6 2F1 3D4 3E8 2I4 3I7 4F5 5D6 5F8 4G8 9C2
7A9 8E2 8F4 7E5 9E6 9D8 8D9 7G2 1H2 1G1 5H1 5G9 9I1 8I5 6H5 6G7 4H4 6B4 4B6 6I6
9G4 7H6 8H7 9H9

112: 2G2 8B5 8E9 7I3 2E5 6D5 **a81 a97 b2r6 c2r dCc** 6B1 c6r 5I7 bIc1 c5r **a46 a56 d5r d5b gAc d4r o1E3CR t3Ir u347r9 u156r9 cIc a68 a48 h18 cFc o2F1Cr p347r9 qIDc2** 5C2 6C6 4A7 2B7 2A6 5E6 6E7 9A2 7C7 7D2 3F2 1E3 3C3 1C1 3B8 1A9 2F1 1D8 3D6 3I1 2I8 3H9 4B9 4E2 4F3 6I9 5F9 6F8 5A8 6A4 5D4 8A3 8C8 9E1 9F4 7B4 9B6 9H7 9G8 4H8 4G4 8H4 1I4 8G1 5H1 5G5 1H5 1G6 7H6 7G9

113: 3C2 3G7 1G6 1H5 3H8 5D7 6C7 2A7 7H3 8I7 6H9 3F9 4E9 **a82 b9r2 cFc c4r cDc a26 c2r c6r cIc c5b f5r gBc** 9C3 **l25** 9I2 5G2 6F2 5F5 6I5 **p249r4 o7D8GR q47r1 o8A7Er q51r3** 3B1 1E1 **t5Cr u724r8** 8E8 4F8 2D8 2F4 6E4 5C4 4A1 5B3 1A3 1B4 1C8 6B8 4D3 3E3 3D6 5E6 4G4 4I6 5I8 5H1 7E2 8A2 7A4 9D4 7D5 7I1 8C1 8B6 2C6 2B9 9B5 7C9 8H4 8G5 7G8 9G9

114: 5C9 6I5 8F4 6D2 9D9 1D8 8D3 8H6 8G5 1H5 4G4 1I4 1B7 1F2 3C4 9C6 4I6 **a39 a61 c2b 2E6 d1b fAc s68 u417r3 v3568r1 b9r1 gBc p235r3 r2I** 8I1 5G1 2H1 1E1 3B1 3A6 1C3 2F3 3G3 2I9 2G7 6A1 5B6 6B4 4B8 2A8 2B2 5A3 4E3 5E4 5F7 6E8 4F9 3E9 3F5 5I2 7C1 9A2 7B3 9B5 8A7 9F1 7E5 9E7 7F8 7G2 7I7 9G8 7H9

115: 1A7 4E8 3B8 2H8 9I8 8A8 1B2 3H2 **a11 a76 b4r1** 1E1 3C1 **a16 b8r5 bIc4 bIc6 b6r6 o6I4CR q93r9 t1Hr r9G a33 c1r uFCIc3** 7E2 2D2 6F2 9C2 **dFc pCFIc3** 7H7 **r7I a69 e93r9 i46** 3I7 7I5 9A5 6C5 4C3 6A9 5A1 6H1 4I9 8H3 6I3 7F3 9G9 1H9 2C9 2A6 1C4 3D9 3F6 1D5 2E3 1G3 2G4 3G5 5D3 5E5 4D7 4F1 6D4 6E6 5H4 4B4 5B6 4G6 5G7 7A4 7C6 9D1 9F4 8F5 8D6 8E9

116: 6C6 5F8 4I2 7E8 1I6 **a41 fGc** 8G8 **a35 gHc** 7G4 **a99 o4H5Dr p159r3 q62r4 q93r6 u478r7** 5G7 6G5 9G9 4H3 5D3 2F3 1C3 2C8 1H8 7A3 7C9 9I3 6D1 **a24 a55** 9C5 **a76 b1r5 c7r** 9E7 4D7 2D6 3A6 **a81 d2r** 3H5 **h67** 7B7 9B6 8F6 9F1 7H6 8H7 **s48** 3F2 2B2 2A5 3B1 1E1 1D5 2G1 1G2 5B5 4C4 4A1 5A9 6F4 4F9 4E5 5I4 2H4 3E4 2E9 3I9 6H9 8C1 8B4 7D2 7F5

117: 5A2 **a29 a35 a46 a99 d8r a86 dIc a38 a91 bIc6 f5r a45 f7b qBGc2 e93r2 u368r7 uCFHc8** 2A9 4A4 5H4 1A1 5F5 6A5 **b5r3 b5r9** 4D8 6I8 5I1 4I6 5C6 **o7I9DR 3C5 e83r8 p368r7 f9r eFCc4 c1r** 1G3 4H3 6G9 4C9 7B9 9H9 **r9E** 9G2 2I2 3D2 1I7 1H5 2H8 3G6 2B6 2C3 3A7 1C8 3B4 1F4 2F7 3E8 6B3 6C1 7C4 9C7 8A8 7F2 9E4 6D4 6E7 7E1 7D6 1E6 1D9 5E9 5D3 8E3 9D5 8B5 9B1 8D7 9F8 8G1 7I5 8H6

118: 5F1 7C4 7D1 8F4 1D4 2G4 2H9 5I4 9D6 2A1 2C7 **a87 a92 a98 bIc5 bIc3 c1r a32 c1r** 3A6 5G6 1I6 1G1 8I1 **a99 q27r3 c8r t4Hr u513r2 u518r3 uCDGc3 g6r pCEHc8 r9C** 9G9 8B9 6A9 4I9 6I2 7G2 8G8 **dAc eFBc2 e72r3 h58** 7A5 1B5 1A8 9C8 6B8 4B6 6F6 9A2 5C2 2B2 3C3 1E2 2F3 3H2 1H3 3G7 5A3 6C5 4F2 6G3 4D3 6D7 4G5 5E5 4E8 4H7 5H8 7B3 8A7 8E3 9E7 7F8

119: 6F5 1E5 4F6 6B6 3C6 4B9 4C4 5D8 4D3 3F3 5I5 6I9 2H9 3D9 6G4 9F9 7I3 8C3 5A3 9G5 8B5 2C5 9B4 8F8 **cIc q73r8 e91r8** 3I4 1D4 8E4 **a21 u958r7 v5689r7 a17 a77 e71r7 o2I1Fr r5H** 7C1 **a91 d1r e72r2 s88** 7F2 3E2 1F7 2F1 1G1 1H2 2B2 3B7 1A8 1I6 2I7 3G8 6D2 5C2 6A7 4E7 4I1 4G2 5H7 9A2 9C7 7B8 8D7 9D1 8H1 9H6 7G7 9I8

120: 2A5 2D7 9B7 9C6 2B6 7E5 8E6 3A9 3C3 9A4 7G4 **a39 a41 a43 a72 a78** 7D9 9I9 6I5 4F5 8I7 7I3 8A3 7A1 **cEc d4r 4C9 eIEc8 fHc g6r h47** 4E7 6F4 1E4 6E9 4H4 6H7 **q69r8 t6Dr o4D5Gr cDc u835r2 pFHIc2** 8G1 2C1 1B8 6B1 4B3 6C2 5F2 5D3 1F3 2F9 3E8 1D1 3H1 3I2 2G8 1G9 1H5 5E1 4D6 6D8 4G2 6G3 5G6 5I8 7B2 7C8 9D2 8F8 8H2 9G5 9H8

121: 2E9 2D4 1H6 2H5 6A7 4E5 6E4 4C4 6G3 8C5 9D5 1F5 4B6 7C6 9E6 5D6 8G6 6F1 7E1 5C9 8H1 9H4 8A4 **a73 c7r p289r3** 5E3 **bIc2 u924r2 a72 vCDEHc2 dGc h12 c2r cIc o2I3Cr q61r8** 3G8 1I7 3E7 1E2 2B2 1A1 1C8 3C3 2F8 1D3 2G1 3H2 2I3 5B1 5A8 6C2 5F2 6D8 4I1 4G2 9A2 7A9 7D2 8F3 9B3 7B8 8B7 8I2 7H3 7G7 9I8 9G9

122: 1D6 2H7 3D7 2D2 3G5 6A7 5E1 1B4 2I4 1I9 3I2 1A2 2A5 1E5 5H2 8C2 9G2 7G9
bIc9 e76r1 3B1 d9r 9E7 8B7 u637r8 u937r8 v3679r8 a58 a68 t6Hr 6G6 5F6 a55 c5r
5B9 g4r q58r3 a93 o8A4BC r4B 9B3 3C3 2B8 2F3 3F8 2E9 5A3 4A8 6C1 4B6 6D8 4D9
5D5 4C5 5C4 6F4 4I1 4G3 4H4 5I8 6H9 9A1 8A6 7C8 9D4 8E8 8F9 9F5 7H1 8I3 8G4 8H5
9I6 9H8

123: 2C1 3C2 3B8 3A9 1D1 2I6 2H2 5I2 4D2 9F2 8E9 7I9 **a14 a17 a28 b6r1 bIc5**
7B5 4A5 5H5 6H9 5C9 6G1 9H1 b5r3 bIc3 c8r e74r3 q86r6 4E6 5E1 4B1 5F3 3E3 1H3
pBDHc4 s88 cFc u347r7 vAEFIc7 d9r 6A6 4C3 5B7 6C4 5D4 6F7 6I3 4G7 9A3 8B4
7C7 9E7 3D7 3F6 2E5 3G5 1I7 2A7 1A4 2F4 1F8 3H4 2G8 8F5 9D6 8C6 9C8 7D8 7G3 9G4
9I5 8H7 8I8

124: 3A6 6A2 8B6 9B2 8F4 8E9 7I6 1A4 1F5 5B8 4G8 6G6 4E6 5H5 6E5 9G5 7A5 3G4
a31 a41 a67 a77 a82 b3r9 d3b t8Ar u347r3 cFc a51 d2r q93r7 v3569r7 cDc f2b
p347r3 8C7 9H7 1G7 2B7 1B9 3D7 3F9 1E3 2F1 1I1 2I9 4F3 5E7 4D9 6D1 4C1 6C4 5D4
5I3 4H4 6I7 7F7 9I4 8I8 q37r8 9A8 3C8 2A3 2D8 3E2 2G2 3H3 8A1 7C3 7D2 7E8 9E1 7H1
8H2 8G3

125: 2C4 3F6 1E8 5E7 7D4 8G2 5D8 4D6 8E6 6B2 1C2 7F1 2D1 1A1 9C1 4C8 **a15 f3r**
4G7 a33 a37 c7r gHc q72r9 a39 1F9 2E3 4I9 h37 u627r5 5G4 4A4 9H4 9I6 5H6 4H2
5F2 q58r5 o9A8Dr 3B9 eFBc5 o8C9Fr p358r5 s68 8C3 9B5 5A5 3C5 4B3 3A3 1B7 1H3
3H7 6D3 6E9 4F5 5I3 6G5 2H5 2G9 6I1 3G1 3I8 8A7 7B8 9A9 9F3 7E5 8D9 8I5 7I7 9G8
7H9

126: 2D5 2F6 5A5 5E2 3D2 4E4 7D9 6F9 5F3 6D8 4D1 5I8 4G9 8D6 8H9 1E7 1G2 9I2
8C2 2B2 3B9 2E9 3E8 2C8 9B8 8F8 9F7 bIc3 dAc h46 q83r7 a17 t9Gr 8G7 3A7 s58
r9G 5H4 pAEHc1 o5G7Ic r5B 7B7 bIc1 uBAIc6 4C7 6C4 7A4 1B4 1A6 r5G 3G3 2A3
3C1 2H1 2I7 6H7 6G5 8A1 9C3 7C6 9E1 8E3 7I1 5G1 6B1 4B3 5B6 6I3 4I6 9H5 9G6

127: 1A9 8C3 7E2 **a33 bIc5 b3r5 c3r 1C6 3C2 3A8 a11 a34 cDc 1D3 c4b 6C5 fFc**
9F8 a54 a56 d9r fHc q85r9 t7Fr a84 c7r a85 3G5 3I3 u428r7 p569r7 4D8 5B8 4B3
g6r a69 o6I2Gc r4A 9I4 8A4 9C7 4A7 5C1 6F1 5F3 6D7 6E9 5E6 6A6 5A2 4E4 4G1 6H2
6G3 5G4 5H7 6I8 2G8 5I9 2H9 3H6 2F6 2E7 1F5 2B5 1B1 3D4 2I1 1H4 7A1 9A5 7F4 8E5
7D6 8F7 9D9 9H1 7I5 8G9

128: 4C4 2B4 5D3 7F1 6I1 7H4 2A3 3A9 8D9 7B9 8F4 1D4 9H9 7G7 **a77 a86 3E8 d5b**
a56 6G2 8G8 q91r5 a15 uHBEc5 v1269r5 b4r5 r7C 7I5 4H5 8I3 7C3 8H2 3C2 5A2 7E6
i89 2H7 p358r6 2C8 r1C 4G6 3H6 1A6 1C5 3B1 1H1 1I8 2I2 1F2 2G9 5C1 5B6 6A5 4A7
5E5 6F7 6D6 2F6 2D5 5I7 5H8 4F8 5F9 4I9 8B5 8C6 9C7 9F5 8E7

129: 5C8 6D3 6G7 4I4 6E4 9F3 6C2 6A5 2B5 4A1 **a69 dIc a91 1B1 9C1 7G1 3C4 h69**
6H9 4B9 6B6 a66 q47r5 a85 u258r6 t3Br uAEHc8 a18 c3r c3r 7H6 8F6 4E6 dDc a24
h16 3I1 2D1 3D6 2G6 1G4 2F4 3H8 2A8 1H3 3A3 2I2 5I6 p358r2 qAGc2 e94r2 o8B7Er
r9B 9D2 5F2 1E2 3B2 1A7 3F7 1F9 4D5 4H2 5G5 7A2 7D4 9B4 7B7 8B8 7F5 9E9 7E8 8G2
9H5 9I7 9G8 7I9

130: 2C4 3F8 8C8 5G4 **a25 a95 b5r5 9C5 8H5 8I7 3G7 9I4 8E2 8F4 1E4 4C6 o8D1Fc**
1D1 1A6 9B6 cFc p149r9 q73r9 e82r9 s68 t3Ar dAc s68 b3r3 u637r6 5I8 7G8 r3I 7I2
9H9 4G9 3I9 2B9 2A8 3B5 3A3 2E5 1F9 2D3 3E6 1G3 2H6 2G2 5A5 6A7 6B8 4B2 5B1 5E3
4E7 6H2 4H1 6F1 4F5 5D6 6G5 6I6 5H7 8B3 7A9 7E1 9F3 7F6 8D9 7H3

131: 1C8 3I1 6B6 2A6 8B5 7I7 4C7 4I5 **a12 a68 c2r 1A1 9A7 5B1 6D1 2F1 2D3 1F4**
b6r4 cEc p149r3 t5Cr a42 uFCIc2 v2349r2 cHc 3G4 7H5 7G6 8E6 3D6 7E1 8C1 9D8
8G8 6H8 6I4 8H4 6C2 6G9 a49 o9E7Ar q94r4 5A4 5C9 4B3 5I3 4G2 3H2 2B2 3B7 1H7
2E7 1E5 1G3 2G5 5F2 5E8 3F8 3E9 4D9 4E4 7C3 9B4 8A9 7A2 9E2 8F3 7D4 7F9 8I2 9H3

132: 1H5 9E3 9I5 8F8 **a27 a39 a63 a86 b8r1 fGc** 5G4 5I3 **a92 cEc** 5D6 7F6 **cFc c8b fBc r7I** 7E4 1D4 6F4 9F2 **h28** 2D8 3E2 2E7 6D2 6E8 **t7Ar d7r k198** 7C8 9B9 7D9 9D1 7G1 9G8 **q96r7 r8B e96r7 o7A1BC c1r o9C3Ac** 3G3 **e73r7 u638r6 a46 r6H** 4G6 6H7 5B7 3A7 3C4 1G7 2G2 1B2 4F7 5F5 4C5 2A5 2B3 2C6 5A1 1C1 1A9 6A3 6B6 6C9 4E1 5E9 4I9 3H9 3I6 8B1 7A2 8A4 9C7 8I2 9H4 8H6 7I7

133: 2G3 1D3 3G6 4H3 7E4 9E1 1E6 1F8 4E8 5H1 7G1 **a25 a27 a34 a37** 4G7 6G4 6I8 **b9r7 d6r fAc q39r9 r4F** 4I5 5G2 8G5 9G8 7A8 9A6 8D8 **d8r f7r h67** 8F7 7D6 6F6 8H6 7H7 **u926r2** 8B4 3I4 **o2A9Bc** 9C7 **e93r9 p269r2 r4A t4Cr** 5E9 3D9 2A9 2B2 2D7 2E5 1I7 3B7 2I1 4C9 6A2 4A4 1C4 1B1 1A5 6C1 6B3 5C5 4F2 6D5 8C2 7C3 7B5 9B9 9D2 7F9 7I2 8I9

134: 2B6 1H3 2G5 6D8 2E9 9F9 4B8 1D6 3D7 3F3 **a53 a55 bIc1 bIc4** 5E3 6A3 4A5 6C9 5C7 1A7 5B2 6E5 4E6 4G9 3I9 8B3 8A9 7D3 8D5 7I5 3B1 **e92r8 fGc t1Ir uGCEc2 a32 c1r a14 q18r1 s78** 9I2 6H2 **pCEIc4 o8C7Er o7G2Hc r2A** 8E1 2D1 1E4 1I1 3G4 2A4 1C8 3A2 1G2 2H8 5G1 6F1 4F7 5F4 4H4 6G7 6I6 9A8 7A1 7E2 8C2 7C4 9D4 9H1 8I4 8G6 8H7 7G8

135: 3H4 1H9 1I7 4G6 8E4 4F4 1F2 **a21 a33 c6r** 5G8 7I5 6E1 6I2 2G2 3G3 7G1 8G7 6H7 **r5F r2F** 2I1 3D1 3I8 **uDAFc8 o9E2Dc** 7E6 3F6 3B9 7F7 **f9r q69r5 a85 q69r8 a88 c8r** 7B2 **cDc** 8H3 9H2 8D2 **p148r8 s47 cAc q72r3 t4Br u527r9** 4E9 6D8 5F5 4H5 6A5 5H1 9D5 9F8 1E8 2A8 2D3 1B3 1C6 2F9 6B6 6C4 2B4 2C5 8B5 8C8 4B8 4C1 9B1 9C7 5B7 9E3 7C3 5A3 5C9 9A9 7D9

136: 2B6 2C4 2E5 3F8 1F6 4D5 9B4 8D4 **a12 a75 a79 bIc1 fCc a11 o8H9ER** 1G2 1I4 5G4 **a37 pADIC9 q48r7 u958r8 r8C dIc e91r3 d6b t9Dr c7r f8b r3D e84r7** 2H7 **t1Dr** 3D9 2G9 9I9 7A9 8C7 7C5 9C1 9A8 4C8 5H8 7F1 9D3 2F3 7D7 1E7 1D1 3G1 2A1 1H3 3I6 4F7 4H1 4G6 8E8 8F9 5E9 4B9 6E1 5B1 6B5 5F2 6A2 3C2 3A3 5C3 5A7 5I5 6I7 6G3 9E2 8H2 7I3 8G5 9H6 7G8

137: 1B8 5H8 9D8 8D3 9G3 5I3 6B3 2C3 6H6 5E6 8I6 9C6 3A6 7G8 **a19 a67 2A7 a74 qBHc2 u826r1 d7r** 8F7 **d8b e82r2** 4D2 6A2 **a54 c1b p268r1 dHc c8r u726r5 r8B v2678r5** 4A5 2B5 1A4 4C4 5C1 5B7 6E1 4I1 6G5 8B4 7C7 8C5 7B9 7F1 1D1 8E2 1F2 3C2 1C9 3D5 2E4 2H2 2G1 3G4 1I5 3H7 3I9 5F5 5D4 4G7 4H9 9F4 7E5 9E9 8H1 7I2 9H5 8G9

138: 1A4 6C9 4D6 5F9 4G9 8G7 9H6 3E6 5A7 5B6 9C7 3F4 5G4 **a41 a45 a62 a68 cAc cGc h28** 9B4 **h28 o7G9AR qHBc2 q92r9 uHCGc8 w8E3** 9F3 6F7 2D7 **a82 e92r9 fIc** 2F2 1F1 **bIc1 p249r8 r7H** 7C8 2B8 2A1 1C6 2G6 1G3 2E3 1D9 3D8 1E5 3H5 1H8 1I2 2I9 6B1 6A5 4A8 4B2 6D3 6E4 5I5 5H1 6G8 6H2 8C1 9A2 7B5 8A6 8E2 8D5 7D4 9E9 7I1 7G2 8I4 9I8 7H9

139: 6D7 9F7 8I7 8G9 7B9 9D9 7G5 9E5 3D5 3E4 4D4 7E6 7F8 5E8 9G4 **a62 a66 c1r d2r** 2F9 **e51r2** 4H2 **fBc h78** 2H7 3B7 2B8 3I8 3H9 9H8 **o9A3CC r2D** 2G6 3G2 **v1279r1 q34r1 e86r1 t5Cr** 5B4 **uBDHc3** 6C9 5I9 **r3C** 5C2 2A2 3C1 3A3 1B6 1C5 2D1 1F2 3F6 6B1 4B5 4C3 6A6 4F1 6E2 5F3 4I6 9A1 8B3 8E1 8D2 7D3 7H1 1I1 1H4 6I4 6H3 9I3

140: 6C7 6A5 5D8 4H8 8C9 8A8 3C8 2I8 8E5 7G2 5H2 9H7 7D7 7A3 4B3 4C2 5G3 7C4 5A4 7E6 **a76 e42r9 fGc q91r3 r2D s78 u159r1 o3I1Br cBc t2Er** 2D4 1B4 2B2 3E2 1I2 3I4 **a33 t4Gr v1569r1** 8H4 6G4 **r3D** 3H9 2E9 1H3 2G1 6F9 5F6 4A6 3B6 1C5 3A1 1F1 3F7 3D3 3G5 1G7 5C1 4E1 6I6 6H1 4G9 9B5 9C6 8D1 9F3 9I1 8I3 8G6

141: 6E8 5I1 6H6 9H8 5A9 6C7 4A8 1B8 7C8 **a19 a32 a65 a79** 1H9 2H5 1E5 **cAc** 7B1 **a81 p357r7 i24 q74r4 u147r4 uEBHc4 v1467r4 w8D4 t9Er** 9D1 8H1 7G4 9E4 8A4 9A2 8E3 8D2 7F7 5E7 5F6 2E6 1A6 2A7 1D7 1F4 3F1 2C1 3E2 2D3 1G1 2G2 3H4 2B4 3G7 1I3 6D4 4I4 6I2 4F2 6F3 4C3 3B3 3C9 6B5 4G5 6G9 8C5 8B9 9G3 8I7 9I9

142: 3F4 1E6 5A5 6A4 6D2 2E2 8D3 7H4 7A1 **a12** 1H2 **a28 a29 a58 a87 c8r f3r** 5H3 **a33 cGc cGc** 1I3 **a38 d5r gBc a76 c7r h17 h38** 9B2 3C2 8I2 **u425r7 o5B6Gr q26r9** 4B6 5F6 **a49 v2567r9 r4E** 8G5 3H5 3G6 4I5 5I4 4E4 4F8 5E9 4G9 2I9 2H8 1G7 2B7 6C7 6B9 5B1 4D1 5D7 6G1 4H7 6I8 6H6 9E8 7E5 9C5 8C6 9F9 7C9 8F7 9A7 7B3 3A3 1A9 3B8 1D8 3D9 8A8 9G3 9I6 7G8

143: 4E2 4D9 5H5 7A9 7G2 9B3 **cFc cEc** 1D7 3D8 2I8 8H8 7C8 4A8 8C5 8A2 3C2 1F2 3F1 8I6 2B9 4I3 **a17 h35 q24r6 a66 t1Hr u378r4** 1I9 3E9 1E6 **v1249r1** 5G4 5A3 **bIc1 cDc p169r4 r2C r2G** 9G7 2G1 1A1 3B4 2C6 2A7 1H4 3H6 3I7 5B6 4C1 6C7 6A4 6D6 5D1 6I1 4G6 4H7 8B1 9C4 7E1 7D5 2F5 2D3 6E5 6F3 8E3 8D4 9H1 7I4

144: 4H9 2I8 1I7 2E7 1G2 7I2 8H5 2C9 5B9 4A7 8D6 1B8 3F8 4D8 6G8 5G1 5D7 9F7 7B7 **a33 a96 cIc d9r dCc** 1A3 **dAc dFc a25 c6r e96r2 p239r1 q85r4 u547r4 r6A** 5C3 **b5r4 v4578r4 q93r4** 2A4 1C1 3A5 3B6 3E1 1E5 1F9 2H1 4C4 6A2 4F2 5F5 5E4 4E6 6E3 6D9 6F1 4G3 6I4 3H4 3I3 4I5 5I6 9A1 8C2 9B4 7C5 7A6 7D1 9E2 8F4 7E9 9H3 7G4 9G6

145: 3C5 4C2 6H3 6I5 6A4 **a46 a61 cCc** 1C4 2G4 8H4 7D4 4F4 4H1 5C6 8B6 **d7b a72 f3r** 1B2 **cBc d2r** 4E6 **q28r3** 7B3 2C3 3B1 2E1 3F3 6F1 8C1 8E3 7I1 **uIAGc9 v1569r9** 3A9 2B7 6C7 9C9 **h89 dEc p159r7 r3H** 7A7 8A2 9H2 3I2 2I6 3D6 1F7 1E8 2D9 3G7 3H8 1H9 6E9 5B9 6B8 4G8 5F8 5E5 4D7 5H7 4I9 7E2 8F5 9E7 8D8 7G5 8I7 8G9

146: 2A6 5A8 5B3 4C6 6I5 2G4 5H4 5G1 4D1 4F4 7D6 5E6 8D4 7C4 3B4 9F5 7I3 9A3 8A1 8B5 9B6 9H1 8G6 **a72 cAc d2b s78 u913r8** 8I8 **b2r8** 9E8 **bIc9 pAFIc9 q83r9 v2457r7 a57 r8E** 8H9 9G7 4I7 6B7 4A9 5I9 6D9 6F8 2D8 6G2 2I2 3E2 1A2 3A5 1D5 3D3 2F7 1H3 3H7 1C7 3C8 1B9 1G8 3G9 5D7 5F2 7A7 9C9 8C2 9D2 8E7 7F9

147: 1B1 3A3 4A1 5H7 9E3 8I1 2E1 **a19 f8r** 7C2 **a92 a95 t4Cr u725r9 v2457r9 t9Ar dBc a77** 9F4 7G4 8A4 4B4 9A9 9B7 8C8 5B8 7B6 8H6 7H9 8E9 6A7 3B5 **a29 p258r5 cGc c3b r4H** 5G9 2G5 1E5 3I6 2F6 2D9 1I9 3C9 1C7 4F9 **q43r8** 1G8 3H2 1D2 8F2 6E2 6D4 3E4 4D3 6F8 3D8 3F7 6G3 4G6 6C6 4C5 6I5 4H8 8D5 5F5 5D1 7F1 7D7 9G2 9H5 9I8

148: **a77 a79 bIc8 dCc** 2B2 **bIc1 bIc3 c4b d4b fBc fGc a31 g4r** 3D7 8B7 8A9 8D6 **a82 c3r cAc s88 u268r5** 3A5 6C5 5A6 6G6 7H6 3I6 **bIc7** 1I3 **c1r h59** 9G9 2I9 2G5 8I5 **h17** 1A7 3B1 2A3 3E3 2H7 1H1 4A1 5G1 **i28 q47r7 e96r7 dEc r7G** 9I2 5H2 4D2 5D8 4G3 5B3 4B9 5F9 5E5 6E4 4C4 1B4 6B8 4F7 5I4 6I7 4I8 9F5 8E1 2F1 1F6 2C6 1C8 2E8 9C1 7E2 8C2 7C3 9E7 7F8 8H3 7G7

149: 2H7 7F1 8H2 **a58 a61 a74 a89 bIc5 cEc d1r** 1C5 **b1r2 f6r a45 cBc h12** 1B2 6A2 6B1 1G1 5H1 1A9 **t7Hr o7I5GC** 5D6 **cDc p349r6 q52r9 r2G u169r4** 3E3 **r3A u467r3 u369r4** 1I8 2E8 2D5 3D1 2C1 2B3 3A6 2F9 3F2 2I2 2G6 3H9 3I4 6E5 6D9 4H4 4I6 5G9 6I3 8A1 8G3 7A3 5C3 5B4 4F3 6F4 5F8 4D7 1E7 1D4 5A7 8C4 7B8 4A8 4B5 9A5 8B6 9E4 7E6 9F7 8E9 7H5 9H6 7I9

150: 3D7 3E8 5D6 2E6 7H7 4H8 5G1 8G4 9G3 8E3 1H3 3F3 2C3 2H5 3H6 **c6r c6r** 6I3 5B3 **q17r1 a81 r7G r4E r9E s88** 9E5 6F5 6E4 1F4 7F9 **eGEc2 q57r5 a95 o7C9Ir uADHc9 p269r9** 8A5 **c3r h14** 3A4 1C1 2A9 2D1 1E9 3I1 2I4 6D9 4E2 6H2 5I9 4B9 5C5 3B5 3C2 4G5 8C9 8B7 6C7 6A8 6B1 9A1 9B2 7E1 8D2 7D8 9C8 7C6 7G2 7I5 9I6 8I8 9H9

151: 1C9 2A4 3D1 1H4 4H1 5C1 8B9 7D4 4F4 6C4 5G4 8H7 3H2 3F8 2F9 2H5 1D5 2D7 2E2 1I7 3C5 8A5 7A1 8E1 **b7r2 r9A c8r bIc6 t4Gr uDAHc3 a53 w4I8 r4G t6Ar eHAc3** 6B6 3A6 3B7 4A7 4D6 5D3 **cEc l36 o4G6Ar p257r8 q69r8** 8C8 5B8 4B5 6A3 4C2 6I2 4G3 5I5 6H8 4E8 6D9 4I9 9A2 7B3 8D2 8F3 1E3 1F6 7E6 9D8 9E9 7G2 9H3 8G6 2I6 2G8 7I8

152: 2E1 3D5 1H3 2G5 5E5 6G4 2H4 1C4 3F4 5G1 7B5 7E4 9G6 8A1 **a22 a26 a73** 5C9 **bIc9 p148r9 q18r8 t2Ir dIc a32 c2r dBc eGBc8 s58** 8C3 **r8B b9r7 u438r7 dEc pAEGc7 g5b r4F** 1F6 1E2 6E6 5A6 2B6 2A2 4A3 6B7 5F3 4E7 5D8 4F2 6D9 6F1 5I2 3G2

2I7 3A7 1B9 2C8 1G8 3I9 6I3 4G9 9B2 9C7 8B8 7A9 7D2 9D1 9E3 7F7 9F8 8E9 7H1 8G7 7I8 9H9

153: 3B6 3F1 1E5 2D6 3I3 1I9 1H6 5E6 1C8 **a79 cCc a42 c7b d9r o9I5Hc cIc q16r7 uECGc7** 7D1 8A1 7A9 8E9 9I1 5H1 8H5 9D5 **pCEGc7** 2H7 **v1258r2** 7F3 4E3 5C3 6C5 4C9 5I5 **a82 r8D** 7E2 7G7 7I6 6G6 5G9 6F9 7H8 3G8 6I8 5B8 5A2 3C2 1A7 3E7 2F4 1F2 2I2 3H4 6A4 6B7 4D8 5D4 5F7 4G4 4H2 8B2 9C7 9E4 8D7 9G2 8I4

154: 3G2 6I2 5G8 4G5 9I5 8E2 4D2 8F6 8H8 **a18 a31 a34 b8r1 b8r4 bIc4 cDc** 4E6 **a57 f2r** 2F5 **h68** 2B8 1A6 2D6 1D8 **d6r** 6H4 **pDGIC3 c2r q29r9 r6D** 5F7 **b5r3** 4C4 9C8 7E8 7C6 6B6 6C9 **q47r1 r9H** 7I7 2I3 2G1 8I1 8G4 1I4 **t7Fr e74r1 t7Fr c8b e92r9 u324r7** 1G7 2H9 3F9 1B9 3D4 3E1 2E7 4H7 6A7 3B7 3C5 3A3 4B1 5C3 5B5 5A2 6D1 4F3 6G3 9A1 9B2 7B4 7F1 7D3 9F4 9E9 9H3 7G9

155: 3I2 5D3 5E9 7B5 8A7 7A3 **a52** 4B2 4C3 1B3 3B7 2B9 3D9 **a11 a16 bIc5 cIc c8r d7r a87 bIc7 f1r f6b** 6F7 5F5 6I5 **h29** 9G2 7C2 9C9 7H9 1G9 7G7 4H7 **cGc p248r4 q51r4 e63r4 o3A1Hr cHc eHCc8 t3Fr u248r1** 3C1 1A4 3A6 1C8 2D6 2F1 3E4 3F8 1I1 2H4 1H6 2G8 6C4 5A8 6D1 5B1 6B6 6E2 4F4 4G1 5I4 5G6 6H8 8D2 8E5 1D5 1E7 7F6 9D7 9E8 8H1 8G4 9I6 7I8

156: 1E1 3H6 2I9 4F1 6H1 7E6 5D6 9D9 8G1 9B1 8B8 8C9 9C3 **a53 f3r** 3G7 **b3r8 b4r7 d4r q68r7 u147r4** 3E4 3F8 9E8 7F3 5E3 8I3 **a97 b5r2 bIc2 e43r2 o1A2GR s68 t4Cr** 6C6 1B6 **eHBC4 dIc h48 o3C1Gr a15 e82r5 r4C** 4D5 2E5 3D2 1A2 2A8 2B7 1C4 3C5 2G2 2H4 1G5 1I8 4C2 5B4 6B5 4A7 4B3 3A3 3B9 6A9 6E2 5F7 4G4 5I5 5H2 6I7 9F5 8E7 9I2 7I4 8H5 9H7 7G8

157: 1G6 5G2 5I1 4I7 6H9 3G9 4H6 7C6 7F7 7G8 2D8 1A8 8G1 7E1 1F1 **a53 a95 c6r e61r3 f2r a19 r3H s18** 9C5 **a15 a74 q49r4 r3C t2Er a25 u837r4 e94r4 c2r p256r4 o3D9FC** 9B9 5A9 5C7 3A7 3B5 2B1 1C3 2C9 3C2 2F2 1E9 2E5 3D4 3H1 2H3 2I4 1I5 6C4 4A5 4B3 6B8 5B6 6F6 4F8 5E4 5D3 5F5 6I3 4G4 9D2 8E3 7A3 8A4 9F4 8D6 7D5 8F9 9G3 7H4 8H5

158: 3E4 2D6 1C6 2G8 3H3 3I9 1I2 4E7 6I6 7B6 8G3 8H6 5B3 6D3 **a21 a55 a59 a61 a81 a89 q18r7 o9D7GR** 9B9 **a77 fFc r9C** 7G7 9D7 1F7 1E1 2E3 1A3 7F1 **c3r fCc s88 cCc u627r2 uGCFc4 a64 uICEc8** 4H8 9H2 5I1 9G1 **dAc** 6F4 **pBDGc2 qFHc2** 7A2 3B2 2C5 2A9 2F2 3D5 6C2 6A1 3C1 3A7 4B5 5C8 4A4 4C9 5D2 6E8 4G2 5G4 9C4 8C7 8A8 8E2 8F9 5E9 5F5 7E5 7I4 8I5 9I8

159: 4B3 9C2 7B4 9B9 7E7 8H8 7G3 1H3 3C3 3G2 1I4 8D3 8F9 5H2 6G5 2G6 2H7 4I7 **c2r e82r5 h89 r2E r7D r7D** 1E2 4D2 **a55** 9I5 **r8E o7D2EC s28 u537r1 cAc pADIC1 q94r1 a51 s28** 8E6 7A6 8C5 1B5 2E5 3D1 2C1 5A1 4A5 5F5 6H1 4H4 6F4 5C4 6D8 5B8 4F6 1D6 3B6 1C7 3F7 1F8 3A8 1A9 2D9 2I8 3I9 6C6 6B7 4E1 5I6 9F1 7D5 7I1 9H6

160: 3D5 3F9 1B9 2G5 6A9 4G9 7D9 9F2 9H9 4F3 **a44 a61 bIc1 cIc c9r c9b h15 q16r7 s78 a58 u739r8 a78 v1379r8 r2F dBc bIc7 e61r7** 2C1 4B1 6B4 5B2 5C5 4D2 4E4 7A1 9B5 9I1 7I5 4C6 5H1 **q58r6 r2A** 1G1 3E1 **r6E** 6C3 5A7 1C7 3B8 3A3 2A4 2F7 1E8 3G4 2H8 6E7 5D6 5F8 5G3 6I8 7C8 7E6 9E3 8D8 8I3 7B3 8B7 8H4 8G6 6H6 6G2 7H2 7G7 9G8

161: 4H2 4I5 1H5 8B6 7B5 9E5 7I4 8G5 5H8 6E6 8I1 9H3 **a24 a58 a69** 7F9 **a49 a83 a98** 2G3 **b2r8 c2r c2b c5b h69** 3I8 1F8 **t1Ar q14r7 q58r7 u923r1 c7r h28 o2C9AC eEAc1 d1r cAc e85r7 fCc s48** 2D7 1E1 3C1 1C9 3B2 1A7 1D2 2H1 3H7 3G9 1I6 6A2 4A9 6D9 4D8 6B8 2C8 2B4 5A4 5C3 4B7 4E4 3F4 3D6 3E3 5F7 5G6 5I9 7A1 7C2 8A3 9C4 8C7 9A8 9D1 7D3 9F6 8F2 7E7 9G2 7G8

162: 5E8 7G7 2A2 5A7 1C7 7E2 1D2 3D8 2C8 1G8 1H5 5G5 **a56 a63 eGCc6 fHc a31 p348r3 q57r1 r3G uDCGc1 v1257r1** 8H4 8I2 6G2 **b9r1** 8D9 8E3 7B3 7F6 1E6 4D6 8A5

c2r q34r4 q26r9 r5B 3G6 2B6 2H9 1I3 2F3 2I1 6H3 4G9 5H1 5I6 6I4 8C6 7A1 1B1 9A8 9B9 8G1 9H6 7H8 5B4 9D4 9E1 6D1 4C1 4A3 3C3 6C5 4F5 4E4 1F4 3A4 1A9 3E9 6F9 6E7 9F7

163: 4F1 4E7 7D1 8A1 7A8 7B5 7H7 3G7 **a42 fBc m3b a38 r7E a79 a19 d9r a94 t6Br t7Ir t8Er** 7E2 6F2 5A2 5B4 6B9 9C4 9H2 9F9 6G3 8F5 **a33 a58 cIc** 5H9 8I8 6H8 5D8 **q51r5 eIEc5 u249r3 g1r pABDc3 c2r q14r6** 6D6 5E5 2D5 1E3 2A3 3A4 1A9 2C6 1C2 2I2 2G4 1I5 1H6 2H1 1B1 2B7 1F7 2F8 1G8 3I9 3H3 4B3 4A6 6A5 4H5 5I6 9B6 9D3 8E6 7I3 8C3 7C9 8H4 8G9

164: 1F2 5E9 8I8 **a84 cFc fGc a62 7H5 a65 o3D4EC** 9D2 8G2 7B2 **q36r6 q71r8 uBEGc5 u269r9 d3r** 1I7 **bIc6 s58 u836r9** 9G9 3H9 1G6 3A6 2G5 5B6 6I6 5I5 8H6 9E6 6A9 **e63r5 9A5 bHc7 cBc e93r8 t2Er a23 c2r h79** 8B9 2C9 2B7 9C7 7A8 3C8 1B5 3D5 3F7 1E8 6C5 4E5 8C4 1A4 1C3 4B4 6G4 5F4 4G1 5C1 4C2 5H2 7D4 7E1 2F1 2E3 6D1 5D7 4A7 5A3 6F3 4H3 6H7 8D3 8E7 9F8

165: 2A5 2C6 4D8 5H4 8C3 9E1 9G3 7G8 2F1 2I8 8H5 2H9 7H7 9H2 **a14 6F4 6E3 3F3 3D9 1I3 6B5 2E4 a96 cEc s58 a62 o4G6Cr q26r7 eGDc7 cIc h16 r7F u147r2 pCEFc2 t3Ar u148r7 t8Br** 9B8 5C8 1A8 **bIc7** 1B9 5F9 5E5 6D6 4E7 2D7 1E2 3B2 3A4 3C1 1C7 2G2 3I7 4A1 5B7 6C9 4F2 6I1 5I2 5G6 6G7 4G9 7C2 8B4 8A7 7A9 9A6 8D2 9D4 7F5 7E6 8G1 8I6

166: 2G1 1H8 3E8 5A8 5E1 6F6 4F5 9D1 8A1 6C1 9G4 **a14 a33 a39 bIc5 dCc** 7B6 **b3r6 e63r7** 7F7 9F8 7C8 9C5 7G5 9B9 **bIc2 flr o1F2Ar t6Ar u549r3 v1459r3** 7A3 8B2 **c2r p249r2 r6A** 5B3 5I5 5G6 3I6 1I9 1G3 3G2 2E2 1A2 2A4 3A9 3B5 1C7 2C6 1F4 1E6 3D7 4C2 6A5 6B7 4B4 4E7 6D3 2F3 2D9 6H2 4I3 6I4 7D2 9E3 8F9 9I2 8H3 7H9

167: 3F5 5C5 6D3 6F6 4E7 5D9 5E4 4I6 9D8 2E8 8H3 9I5 8A5 8C6 3A6 2D6 1D2 8E2 5H2 2I2 1I3 2B3 4C3 9G2 7C2 6A2 7B8 **q27r4 b9r4 q61r8 a18 u714r1** 9B1 **bIc4** 4A8 1C8 6G8 3H8 **p368r7 q18r1 a81 r6C r3I o2H8Gc v2467r4 r1F** 1A4 3C7 2H7 1F7 3D1 2F4 1G1 3G4 3I9 6B7 4B4 6C9 4H1 6I4 4G9 9C4 9A7 8B9 8F1 8D4 7F9 7I1 7H4 8G7 9H9

168: 2D4 3C4 3I5 5A4 4H4 7D9 9G4 8I9 2H9 1E9 5F9 6B9 7C5 9B3 3F3 **a28 a78 a86 a87 a96** 7A8 9I8 **e81r2 fEc f6r fGc h58 o6D4Br q96r1 r2G u517r7 a67 g5r p158r6 t2Cr c1b** 1C3 **r1G** 8G1 9A1 8B2 2A2 1B6 2E6 3E8 2C8 3B1 1D7 2I1 1G2 2G3 3H7 5C1 6A6 4D1 6D8 4E5 5B5 4B8 4F7 5D6 6H1 6G5 4I6 5I7 5G8 8C6 9D5 9F6 9E7 9H2 6I2 5E2 6E3 5H3 7I3 7H6 7G7

169: 2B5 8D5 9I8 3C2 9B1 6B8 5B4 3B6 2H2 2C7 6A7 3A3 7C3 1C4 **a93 a97 b8r4 cGc c2r h18** 2G8 1A8 2A1 1G3 8I3 **a99 q14r7 r1F o6E5Ir gEc t4Ir f6b s38** 4E8 7F8 **e41r7 o6D9Fc c9r** 9H7 **u529r6** 6E2 5I2 **h36** 5E3 5F6 2D6 3E9 1F7 3G7 2I9 5D7 4I7 5G9 9D3 9E6 7E7 8E1 7H1 1I1 1H6 6G1 4G5 6F5 4H4 6D4 4F9 6C9 4C6 6I6 9F4 7A4 9A9 7D9 8G4 8H9

170: 4B5 6B2 6I1 4H2 7H1 8C1 9C2 8D2 3F2 1D5 3C5 1I2 7F5 8I5 1B1 **a24 a83 cDc** 5F8 **p468r6 uICDc7 a37 v4689r3 dGc a64 g2r q72r3** 1H3 1C9 **c7b p347r9 r3B** 1A4 1G8 2E8 2F1 2D4 3E9 2G9 6F4 4F6 4E3 5D9 4A9 6D7 5C7 3A7 3B8 2I7 4G7 7A8 9B9 9E1 9F3 9D8 7D6 8A6 5B6 2C6 2B3 6A3 5I3 5H4 3I4 3H6 6G6 7C3 8G3 9G4 9I6 7I9

171: 3F2 3H7 7B2 8A4 3B4 5B7 5H8 4C8 7C3 9D3 **a79 b3r9 bIc4 f6r** 5F3 5D1 4D4 5I4 **c5r cFc p148r6 q52r6 a16 q52r9 c2b q52r5 t4Fr uEBHc5** 8F6 **c4r e41r9 v2356r5** 8H5 1H3 7G8 2I8 9F8 6E8 6F7 8E7 9C7 8C9 9I9 3G9 1I6 3D6 1E5 4E6 5E2 6A2 5C6 2A6 1B9 2E9 2F4 1F1 4B5 5A9 6D5 4F9 4I2 5G5 3I5 2C5 3C1 2G1 6G6 6I3 7E4 7F5 8I1 8G3

172: 3A5 2D5 1G9 3C9 7H9 2I1 6B7 6F1 1E1 7D1 9D4 1I8 **a13 a55 9I5 a64 gCc q74r6** 6H6 8H8 7C8 **cIc c6b d7r h46 qEic2 s38 a77 bIc2** 1A3 **a43 e95r2 dAc c9r p127r7 d8r u589r7 t4Er** 3D8 5D3 4D7 5H7 4I2 2G2 1C2 2C7 3F2 3E3 1F7 3I7 5A2 5C1 6A4 4A9 4C6

4B3 6E9 4E8 5E5 5G4 4G5 6G8 8A1 8B2 9C3 8C4 7B5 7A6 9A7 8F5 7F3 8E7 9E6 9H2 8G3 7I4 8I6 7G7

173: 2D3 1C3 5A3 4G2 6B2 6I3 9A1 9F2 2E2 3A2 8G3 5I8 5H1 6F1 4I7 **a59 a78 a96** 6E6 5C6 **a44 cGc f7r a95 a75 cCc h16 dIc q53r7 r4E r7E uDCHc4 a84 o1E5Fc e53r7 u728r7** 9D4 8H4 **r1G** 1B9 **b1r5 c8r s88** 8A7 3B7 2B1 2C8 3C4 2A5 1E7 2F4 3I1 1I4 1G5 2G6 2H7 2I9 4B5 5B4 6C7 4A9 4E4 5F7 4D8 6D9 8C5 8B8 9C9 7D7 7F5 3D5 3F6 8D6 7E8 8F9 7G1 9I5 7I6 9G7 7H9

174: 1A9 3A4 4E4 6I9 9B7 9C4 4I3 3I5 8G5 7I4 1G4 8D4 7D9 8C9 7H6 8A6 9H1 3G8 6H8 6C3 **a72 d2r h23 t2Dr t7Br a78 u925r3 cFc o3E9FC a85 c6r e62r6 q51r8 a28 c1r p138r3 s48** 8B3 2A3 2C8 1B2 3E3 2D2 3H2 1H3 6F2 6D5 1F5 2E6 1E7 1D8 1I6 2G7 5F6 5D3 4F8 5B8 4A1 6E1 5G1 6G6 5I7 7B1 7C2 7A8 9A5 8F1 9E2 9F3 7E5 8E8

175: 1D9 1H1 2A1 9I4 8B1 5C1 8A4 4B4 1C4 3G4 5F4 9B9 7B5 **a17 a93** 3I3 **c6r** 6D3 5G3 4G2 2G9 **p167r6 d9r** 9C7 **uEAHc7 uFAHc7 a57 dFc u428r8 v2458r8 bIc8 q93r8 a18 r7F t1Er t1Ir** 2E7 1F8 2I8 8E8 9E3 7F6 7D1 4F1 6F7 4H7 5H8 4D8 6G6 1I6 3H5 1E5 3F2 1A2 3A7 3B8 1G7 6C8 6B2 5D5 5E2 4E6 5A6 4A9 4I5 5I9 7C2 9A8 9D2 9F5 8H3 9H6 7I7 7G8

176: 1D2 **a21 a28 a52 a64 cEc** 2E8 **dBc** **g6r a51 a55** 4C4 **c4b c5r cCc a75 c8r c8r dFc h57 o9F7IR e75r9 t7Ar u248r9** 3I9 **a35** 9B5 **a71 c9r cIc** 1H8 **d2r pBGIc4 cAc q93r4** 2H4 1G7 1I5 7G4 6I4 9A4 1B4 1C1 1A6 5A1 5C2 7B1 7A2 8C6 8F4 3D4 2D7 3A7 2C5 3E5 3F1 6A5 6C7 4E1 4D5 5D3 4F9 6B9 2A9 2B3 4A3 6G3 6H1 5G9 9D6 6E6 6F2 6D8 8E2 9F8 7D9 9G1 9I2 8I3 8G5 9H7 7I8 8H9

177: 2D5 8B4 1I9 2F9 9D9 1F1 2C1 3H1 7G1 8E1 4D1 9G3 3E4 5F3 8I2 7I6 9C6 **a97 a98 c7r cHc q53r7 r1G r5D s88 uECHc7** 1D8 **p369r8** 5G8 **v3569r7 dBc c6r s88** 6B7 3A7 2A6 3B8 3D6 4C8 6C5 4E6 5D7 6D2 6F8 4H5 6G6 6I4 5H9 4G2 2H2 1C2 2B3 1E3 2E7 2G4 1G7 5A2 4A3 4B9 7B2 7C3 8C7 9A8 7A9 9F7 7E8 9H4 9I5 7H7 8H8

178: 1B7 2D5 3H4 2H2 3C2 7G5 8A5 5B5 7I7 8F7 8E9 **a82 a84 c7r d1r dFc a51 cEc h24** 6F2 1E2 1F4 4E4 6E1 **h24** 7B2 9C4 6B4 9D2 7D4 **q35r6 a56 r7A r9B o7A2BC a43 c5r** 5H7 **r2C dDc uHBIC8 a98 u419r9 a69 t6Ar v1356r8** 4D7 6C7 **r2F** 3G3 2E3 1A3 3D6 2C6 3A8 2B1 3F1 1D8 2F9 2I8 1G9 6A6 5A9 5D3 5E6 5F8 6D9 4G6 4H1 6G8 4I9 7A1 8C3 4B3 4C8 9B8 9G1 7H3 8H8 9H9

179: 1B1 3C8 9G8 1H8 8G5 7E5 7F8 7A7 8F7 **a65 a96 d2r** 1G6 6G3 2G7 1E7 **a26 c3b** 3H5 5I5 6I7 5C7 5H1 4A1 6E1 5E8 6B8 8I1 **e71r4 h29 r3A** 5B2 **r5A o2C5AC r9I** 8C2 3D2 2I2 3I9 2E9 **a74 s88 c8r uFAEc6 a56** 3E6 **q35r3 p248r3** 9E2 4F2 **s88** 8E3 5F3 1D3 3F4 2B4 2C6 3A3 2H3 1I4 4C3 6C4 4B5 5A6 4E4 6F6 5D9 9A4 9C5 7D4 8D6 9B6 8B9 9F9 9I3 8H4 7I6

180: 1C5 1B4 3A6 1F6 2E7 6B6 9F4 8E6 7C6 8G1 9I6 6H4 3I4 9H5 2I5 2H3 2F8 **a78 a92 c2b q48r3 cDc t8Ir u716r7 c9b eIDc3 r1I** 7I8 1I7 **a97 s78 u769r9 a89 v1679r9** 2B9 2A2 4A1 **r4D** 4B2 **o5B6GR r6G** 5C4 4E4 **r8F** 5F3 5E2 1D2 3E9 3G2 3H8 1G9 6F9 4C9 5B8 6A7 6D1 3F1 3D5 4D8 4I3 5G7 6G8 5H9 8B7 8C8 9A9 7A3 8D3 8F5 7F2 7D9 8H2 9G3 7H7 8I9

181: 7A6 5C3 6C6 6B9 4I3 1A3 1E6 9E4 9F7 **a38 a74 b1r9 cGc** 4G6 5F6 **c9r d8b a85 h38** 9B3 7D3 9D8 **a78 o6G5DR q52r1 a21 r6G** 4F4 6A4 6H7 **d8r r3F** 1D7 **uBDGc5 t3Ar** 2A8 4B8 8C8 3C7 2C9 3F9 5A7 **h47** 8I7 7B7 8B4 7G4 7H8 3G8 **p257r1 pBDGc5 qEAc2** 2I4 3D4 **e43r2 r4H** 8H1 1G1 5I1 6E1 6D2 2F2 2D1 5D5 4A5 1B5 3A2 1I2 1H9 5B2 4H2 6G5 7F1 8E2 8F5 7I5 3H5 3I6 9H6 9I9

182: 9D3 9F1 7D7 8B6 3B4 7B5 8E5 **a79 b4r1 d9r dEc f4r** 1B7 **a44 g5b h13** 2B1 1C3 2H3 4C1 4B3 **r6A r8G o7I1GC d6r** 6C6 **e61r8 uFAHc9** 7E9 8C9 **a59 q81r4 eGDc4**

1F5 1A9 4H9 6F9 1H6 9I6 9H5 6I5 4I7 5F7 6A7 9C7 **pAEFc2 r7C** 3C8 2A2 2C5 3D2 2D9
2E6 1D8 2F4 1G4 2I8 3I9 5A5 5C4 4E4 4F2 5D6 6D1 5E8 5G1 5H2 6G8 7C2 9A4 9E2 8D4
8G2 7I4 7H8

183: 9C3 5A3 8C8 2A8 7C9 9D8 6A6 5D6 7D1 **a86 a89 b9r4 c7r** 8B4 7A7 1A4 **dEc** 7F3
7E4 **f4r b4r2 f6r g3r gIc** 7I2 7H5 **q43r5 u158r7 a17 u169r9 u258r9 p169r9 o1D2Ir**
b3r5 t6Gr 4G2 3H2 3I8 3G4 9I4 9H6 4I6 9G9 **h78** 4H8 6E8 4E7 **r5I** 8I1 8H7 2G7 5I7 6B7
1C7 4C5 3B5 1B3 2H3 3E3 1H1 2I9 1D9 2F5 3F1 2C1 3C6 2E6 1I5 6C4 5C2 6F2 4F4 6D5
5F9 6G1 6H9 8F6 8E9

184: 1B7 9H1 8H6 7B6 **a52 m2r b2r8 t7Cr uACHc4 u517r9 o4G2Ic uHBFc9 cIc**
a61 a66 c4r 5B8 9F8 **d3r a36 cFc h16** 2I6 3G1 2D1 2F3 4I1 4G6 2G5 3D8 8F5 8C8 2A8
bIc2 dDc p234r9 c5r dGc q93r4 1G4 1I8 2H9 3B9 1D9 1E5 5D5 4F9 5H4 4H7 6G8 5G9
6I3 5E3 7I9 9I5 7C5 4B5 4C2 2B2 2C4 5A7 **r7A** 7G3 8D3 9B3 7A4 6B4 6A1 8B1 8A2 9E4
3F4 3E6 6F6 6D7 6E2 7D2 7F7 9G2

185: 7C4 7A8 6B8 8F8 7I6 2F6 9B3 9A5 9C9 1B9 3B5 1A6 4B6 6G6 8H3 **a99 cAc**
cHc c8r flr a33 o6H4Fr uEDHc4 bIc4 uEDHc5 bIc5 dDc bIc1 c1r c5r f6r qEGc2
eHFc2 s78 9F1 **q92r7 v2349r7 r9E** 6E9 5A9 6A3 5F2 6D7 4A7 1C7 3A1 1E1 1F3 6C1
5D1 6I2 1G2 1I8 5H7 5G8 5I3 3G3 1H4 3E4 2E7 1D5 2I5 3I7 2G9 4G4 6F4 4F5 4I1 6H5
9E2 7E3 8D4 8E5 7F7 7D9 8G1 7H2 9G7 8I9

186: 3E6 4A1 4G7 8H9 7C9 **a65 a76 c2r c3r** 1G5 **c7r d4r a46 fFc q72r8 c1r** 4H3 4I6
6I5 7G6 2H6 4E5 **cFc c8b e72r8 h15 c8b r6A t9Gr** 8D1 3F1 3D5 9F5 **u824r2 a72 cGc**
s68 u538r3 p167r3 u419r4 dBc pBDIc4 4C2 8A2 8G4 1I4 3C4 1B3 3G3 5C3 5B8 5A5
4B4 6B9 6C6 6A7 6D3 6F2 5F4 5E7 1D7 2D2 1E8 1F9 1H2 2I8 2G1 4D9 7A4 9B6 9C7 2B7
2C5 8B5 8C8 8E3 9D4 7F7 7D8 9I1 9G2 7I3 9H8

187: 3C2 4B1 4D4 5F7 4F2 8E4 9A4 3B4 7E2 8A2 9H2 5G2 5I4 2G4 8H7 8D5 **a58 a59**
cIc 7I5 4I8 **d3b h89 i35 s28** 6A3 6I6 7G6 9I3 8C3 7F3 3G9 4H9 4G3 1H3 1G5 5H5 4C5
cDc q92r9 u167r9 e92r9 r9C r7A uADEc8 p167r8 o2A1Dr 3D7 2I7 1C7 3I1 **cFc r1D**
2F9 1D1 2A1 3F6 1E8 2C8 2H6 3H8 5B8 5A9 1B9 1A6 5C6 6D8 6E9 8B6 7A8 9C9 9F1 9D6
8F8 7D9

188: 5E3 7A3 7F2 3E2 9G7 **a33 a39 b5r8 bIc9 c1r c1r dHc** 7H5 **flc h39** 8H9 3I9
3H3 9I3 **o1C8BC f6r t7Dr u347r4 v1689r6 a26 r4G** 5H1 **a41 pEHlIc4** 2F4 2D3 3D6
8F3 9F6 6F8 4I8 6I2 4B2 2C2 2A9 2B6 4A1 1C1 1A5 6B5 6A7 3B7 3C4 3A8 5B4 5C8 6C9
5A6 4D9 6E4 6D1 4G4 6H6 1I6 1H4 5G9 8B1 8C6 9C5 7B8 9E1 7D4 8D5 8E7 1D7 1E8 9D8
8I4 7G6

189: 6A6 4D6 5F7 6G1 7A1 2B1 3D1 5A8 4H8 **a37 a45 p367r3 q47r4 q37r5 v3467r5**
dIc fFc o3E9Fc pAFIc2 2C8 **q29r6 e83r6 r3C cDc a89 c8r a88 c1r** 1G9 9I9 8G2 5H2
6H9 5D9 2F9 3E6 1F2 1E8 2E7 2D4 2I2 3C2 1B3 2A5 3F3 1D5 3H5 2G6 1I7 6C3 4C5 5B4
6E4 6F8 5G3 4I4 6I5 9A2 7E2 9D3 7F5 9F6 8D8 9B8 8B5 8E9 7C9 9C4 8C7 7I3 7H4 9G5
8H6 9H7

190: 3A8 1G8 1I6 2B6 9D8 7D6 2A7 2C5 2D1 **a31 a37 a84 bIc4 d4r fFc p348r1 c6b**
d7r u647r3 a43 6D9 4F1 7E1 **cIc t8Hr** 7F7 1E7 **e74r9 cHc d5r h17** 8H1 3G1 3H7 8B7
cGc q81r9 o5B1CC s88 9E2 4D2 5E3 3D3 1F4 3E9 5G2 4I3 8D4 8F9 7I2 8C2 3B2 3C4
7B3 6C3 5B1 1C1 1B9 4A9 5A4 6B5 5F5 6F8 6I1 4H4 6G7 6H6 5H8 5I9 9B4 7A5 9C9 8G3
9H5 9G6 9I7 7H9

191: 2C1 2B3 4C3 4B7 3C7 6B9 5D3 6H2 8I3 7E3 9I7 1A9 3G9 7H9 5A2 5I1 **a25** 6F5
a36 a78 c9b e61r8 3A8 **fFc q29r8 r2H** 1C2 9B2 1B5 3E5 **a76** 7D5 9G5 7G1 **c8r r7F**
t6Er uEAHc4 v1367r6 2E7 8F7 8D9 2F9 8E2 4D2 **cEc eHDc8 pAEHc4 r4G** 4A4 3B4
2A6 1E6 2D8 2H4 3I6 1I8 6C6 5F4 4F6 4E1 6E8 6I4 5G6 4G8 7B6 9F1 9E4 9D6 7F8 8C8

7C4 8G4 9H8

192: 2E7 3E3 2H3 1I5 1H2 5F5 5H1 3I1 8C5 7D1 9B1 1A1 3C4 1F4 6C1 5A4 7G3 9G5 1E9 2A9 3H9 **a76 q15r6 s78 u968r2 a82 cIc** 4I4 8H4 **q86r7 s78 s78 c5b d6r dDc b8r8 eGFc6** 7A6 **e86r7 t5Cr o5E6AR pCEIc8 c5r e51r6 r4H** 8B7 4C7 5B6 2C6 1B8 3F8 1D6 3G6 2I8 4B3 6B9 5D3 6F6 5E2 6A2 5C8 6D7 4D8 4F9 4H6 6G8 7C2 8A8 9F2 7F7 9E8 8D9 8I2 9I6 9H7 7H8 7I9

193: 2C6 2A2 3F6 7A3 8H6 8G3 6H3 4B3 4C8 5F3 2D3 4I1 5I6 4E6 4F2 5G5 7I8 2G8 **a19 b9r2 bIc4 dIc a34 i57** 6C1 8A1 **a49 a59 a29 cHc** 3B1 **c2r p236r7 q57r4 r8B** 5A9 1C9 **uDBGc4 v1257r4 t8Er e85r7 c1r dFc** 2E9 1I4 7F1 1E1 2F4 2H1 1H4 7C4 6B4 5C7 6D7 1F7 2B7 1B5 1A8 3D5 2I5 3I7 4D9 5E4 4G4 8C2 9A7 8B8 7E2 8F5 8E7 9D8 8D4 9F9 9I4 9H2 3G2 3H9 6I2 6G9 8I9

194: 3A1 1B5 6A5 4H6 6H4 **a14** 5B4 **a47 d2r a31 f5r f2b a22** 6E2 **p249r3 q27r6 a76 u724r1 v1356r8** 8D9 4F9 8I2 8H5 3G5 **fGc g7b r4E** 6D3 6I8 1G8 5G2 3I6 1I1 **eHDc1 r4G** 2G9 2H3 **r7G** 7A9 9H9 5I9 4G3 5C3 5H1 4E1 2F1 5D8 2E8 3C8 1C4 2B6 3E4 1D6 3D2 1F7 1H2 3H7 5E7 5F5 9B3 7B2 7C6 9D1 9F2 7E5 9E6 8F8 9A8 4B8 4A7 8A4 8B7 7F4 7G1 7I3 9G4

195: 2A6 3G3 3I4 9B2 9A3 7E2 7F6 8C6 7D7 6H4 7G4 6C3 5I2 **a79 a81 fHc a68 m4r uAFGc7** 2B7 1F7 5F8 **a48 c4b p269r9 b3r9** 7A9 **s88** 1H2 8G2 **a35 a91 q51r1 v1578r1 r4G** 4A8 6A7 5E7 4E6 5H6 4H3 5D3 6E9 1D9 3E8 1C8 3F5 1A5 3B1 3C9 2E1 1G1 5C1 4B9 4D5 4F4 4I1 4G7 6I8 5G9 8A1 7C5 9F1 9D4 9E5 8D8 7H1 8H5 2I5 2H9 9H8 9I9

196: 6C7 4G3 9A5 8B1 2F5 5H7 1I7 8G7 9F7 7F3 9C3 1A3 2I1 **a99 r6D q84r9** 5F9 6D8 **a29 a56 f1r a24 i56 dHc o2B1Fr r9D b8r2 uHAFc6 uBFIc8 a18 v2469r6 c7r q17r6** 8C4 **d4b dAc e71r6 t3Gr a32 dGc r1F** 1C6 2G6 3F6 1F8 2B8 1B2 3A4 2E2 2D4 1H4 3I8 3G2 3H9 4B4 4A9 4I6 6E6 4E5 6H5 4H2 6A2 5A1 4C8 6G1 5G8 7C2 8A6 7A8 9B9 8F2 7E4 7D1 1E1 1D9 9D6 8E9 9I2 7H6 7G9

197: 1A1 2B5 3E1 2H2 3I9 2C9 4A2 6E2 5H9 6H1 5D1 7C7 9F1 8H5 9E5 **a44 bIc8 cCc** 6D3 4D5 4E9 6I5 **a46 h48 p157r8 q51r7 cEc a23 t2Gr b3r6 dGc o9C5Ac a76 u915r3 a73 cAc v3469r4 q17r4** 8A4 3B4 3C6 1B3 2A8 1E8 3G3 1H4 5A3 5B6 4F8 6C8 4C4 5E7 6G4 5I8 9C3 9A6 7B8 8B9 9B2 7D9 7E4 2D4 1D6 2F7 2E3 2G6 1I7 4I6 4G7 8F3 8D7 8I2 7I3 9I4 7H6 8G8

198: 1D7 1G2 1H5 3H3 8I1 4I7 2A4 1I4 7A7 3B7 5C7 9H7 3A1 **bIc3 c2r d6r** 6D5 2E5 2D8 **a59 dGc a68 b8r8 fEc** 6B1 **fBc h23** 6A3 4B2 6E2 4E3 8A2 9B5 4A5 5G5 4G1 5E1 1F1 9C3 1B3 8F5 8B8 **b9r4 bIc4 s58** 6C8 4H8 **r8C uHBIC9 v2568r6 c7r p267r9 q73r6** 1C6 2B9 3G9 1E9 2I6 5B6 4C4 5D4 4F6 3E6 3F4 4D9 6H6 6I9 7B4 8C9 9E4 8D6 7E8 9F9 8H4 7G6 9G8 7H9

199: 2C6 2A4 2D1 4C3 6H2 6I4 8F2 9C2 1F7 **a23 a28 b4r5 bIc5 d6r a55 bIc5 cCc cAc** 9A1 **c9r dFc j15 o9I7Dr r9E fHc uIADc8 v1678r8 o3I7Hc** 2E8 **p267r9** 3H1 **o1H4Ic q75r7** 4H7 2I7 1H5 2B5 3B3 3A2 1B8 1C1 2F3 3E9 3F6 3I8 2H9 5B2 6B1 6C5 5A8 6D6 4D8 6F9 5G1 4I5 6G8 7D9 7G7 7H8 8C8 7C4 9I9 8B9 9B7 7A3 8A5 9G5 7F5 5E5 5D7 5F4 8E7 9E6 8G3 9D3 8D4 9H4 8H6

200: 5H1 6I8 5G4 6H6 4H3 4G9 8I4 8D6 5E6 3B8 6B5 4E5 7I7 **a95 o9B8Fr pBEHc7 c8b fDc c5b cFc eFAC3 s88 s88 cFc q91r9 uCFIc1** 9B1 8F1 9E7 3H7 2B7 **l78 c5r u257r2 p369r2 r3D t1Ar o1C3Er c1r e91r9 dCc** 2C4 3D4 2D5 2E3 3E1 1C1 3A9 1A5 2A6 3C2 2F9 2I1 2H2 3G5 1G6 1I9 5A2 6C3 6D2 5F3 6F4 6E9 7A3 7C8 4A8 5C7 4F7 1D7 1F8 5D8 8C5 8A7 9C9 7F2 9D3 9G2 7H5 9I6 8H9

201: 1A9 3H9 5E7 5H3 1G3 4D3 8I9 7H2 2I2 3G7 3D5 5A5 8B5 4F5 4I4 4A8 1I8 2G1 2H5 1H4 5I1 6G5 6H8 **a11 a21 c5b q28r8 u825r4 o8C7Gr f9r** 8E3 9A3 **e82r8 p258r4**

f7r x6 cDc c9r h19 t7Cr 2A7 dCc r2C 2F4 7F6 9B6 2C6 3B8 1B1 3E1 1E6 2D8 6A6 6B2 5C4 6E4 5D6 8A2 7A1 7B4 8C8 8F1 6D1 6F9 9D2 8D4 9F7 7C7 9C9 9E8 7D9 9G4 7G8

202: 5E6 4B6 6B5 4H9 4I4 1A1 3A6 2A5 1I6 3I5 8G6 9A4 8H4 8E1 3E3 9H1 4F5 1D5 4D3 **o7A9Gr** 7G5 9E5 **p249r7** 3H7 **q51r9 eFBc9 t5Gr dGc u368r8 x2 qHCc2 cBc r8I** 9G3 7A3 5A7 4G7 6G1 4C1 **x8** 6D8 5F9 6C9 1B9 1C3 5B3 6I3 **b3r8 s78** 9F8 2E8 2D9 3D4 2B4 2C7 1F2 2G2 1H8 5I2 5G8 9B7 8B8 3C8 3B2 9C2 8D2 7D7 7E9 7H2 8I7 7I8

203: 2D9 6G4 9B8 9F6 8G9 9A9 4G8 7G3 2G6 3B6 6A6 **a33 a72 c1r** 3I3 1I8 3E8 **a34 a37 cAc h37 o8A4Cc d4r b4r2 q28r5 u618r3 a53 x1 fFc h19** 4B9 5A1 4F1 5F9 7A2 **t8Fr x5** 3F7 **c8r o8E6Dc p268r5 u618r7** 5E2 1F2 1E4 6B2 8F4 7B4 7C1 2B1 3C5 3D1 2E5 6F5 8B5 8A7 1B7 1A3 4C7 5B3 4H3 4I2 9C3 9E1 8E3 6D3 6E7 7D7 9D5 9H2 9I4 2H4 2I7 5H7 5I6 7I5 7H6

204: 1A7 2I8 6B8 4B7 4F2 5E8 8H8 **a12 a43 a46 a65 cHc c5r** 5A3 **f9r fAc h25** 9G5 7A5 9A2 7H2 1H6 **q57r7** 9E7 5F7 5D9 4D5 6D1 5I5 6G7 4I3 6E3 4E6 6A6 7I7 8B3 8I6 **dGc e93r9 b1r9** 2F6 **x1** 1I1 8G1 **uBDIc4 v1458r4 o2A9Bc r2A** 8A4 5C4 4A1 2B1 3B4 3C6 1C2 2A9 1E4 1F9 3D3 3G2 1G3 2G4 3I9 5H1 4H4 9C1 7B6 9B9 7F3 9D6 7D4 8E9 9I4 7G9

205: 2H1 4A1 5F5 9E3 9I4 8I5 4I2 4F4 6B4 **a88 a97 dEc** 2E4 7D4 **f3r fDc a86 uCFGc3 x3** 3C3 2F3 1H3 5B3 5A2 6G3 5H6 9G6 3I6 4H8 **q61r7** 2D9 **a27 t3Ar x2 r8B c3r r3A bIc8 s58 e61r9 o8B3Ac r6A** 4B9 6A6 6C8 4E6 6D7 1E7 3F8 2B8 3A7 1C9 3B2 1D2 2I7 1I8 3G9 4G7 6I9 7B6 9B5 8B7 9A8 7A9 7E5 3D5 3E1 9D1 7C1 9C2 8D6 8E8 8F9 7F2 8H2 7H7 9H9

206: 3B3 1H4 6C4 4C3 5G9 6G3 8D3 5E3 5F4 9E4 8G4 **a15 a17 a89 cFc d1r** 2E9 7D9 **a22 a32 b1r6 cDc** 6E1 **a58 pBDIc7 cHc q19r1 eIDc1 q42r6 r8F o1I7Gc pEFGc8 u519r8 a68 x6** 2I2 9G2 **dCc** 1B6 **h29** 8C9 1A9 1C2 8B2 4A2 5D2 3E2 3F5 1D1 2F8 3D6 3G1 2G6 3H7 1I8 4F6 6D7 5B7 4E8 6I6 4G7 5H8 5I5 8F1 7A1 7C7 2A7 2C5 9C6 7E5 9D8 8A8 6B8 6A5 9B5 9I1 8H5 7H6 8I7 7G8

207: 3A9 3C3 3H4 4C5 4I2 8H7 1B7 6A7 8B5 8C6 3B6 2C8 1C2 3D1 **a44 a63 a66 cIc** 3G8 3E2 6I6 **j57** 2G2 **q84r8 b5r8 r2E** 3F5 3I7 **r7C a98 u816r9 q19r9 a99 c9r e96r8 o6D8Ec t7Fr uFCIc1 x1** 6H3 **a61 dFc** 7A3 9A2 7H2 7I8 5H8 5I1 **s88** 6C1 6B4 4A8 6D8 6E9 8A1 7C4 9B8 9D4 4F4 4E1 4D6 2E6 2F7 1D9 1H6 1G1 2I9 2H5 5E7 5F3 7F1 9E3 8E8 8F9 9H1 8G3 9I5 9G9

208: 3F9 5E3 6D6 3H1 1C1 5H7 9G7 **a51** 5G1 **a54 c4r** 4F7 **c6b o1E9Dc q47r9 uGAFc3 a33 x8 x9** 1G9 2G3 1D3 7H3 **e74r9 i58** 9I1 **a94 a96 uBDHc2 a42 gBc eIBc8 cAc** 9A3 8F3 **pABFc5** 6G5 5I8 3G8 2B8 8G4 **r1B** 9B5 5A5 3C5 1B4 2A6 2F5 2D1 1E2 3D4 2I4 2H2 1I6 5C4 5B6 4I2 6B2 6C7 6A8 4B9 6H9 9C6 8C2 7B7 7C8 8A9 7E1 6F1 6E4 9D2 9F4 8E8 4D8 4E5 7D5 8I5 8H6 7I9

209: 2A3 1A5 2B7 3D3 5A9 6A1 6G3 9C3 9A6 8C9 9F9 7G5 8I1 2G1 7E1 5F1 2E9 **a65 a72 a92 a97 fDc h27 p158r4 d3r q36r6 r2D** 3G9 1B9 **o1G2Fr uEAGc7 a57 x2 c4r eHFc8** 4A8 6C7 5E7 4G7 8A7 9H7 7D7 8H2 9D2 **b5r2** 6I5 **e63r6 r3E** 6E2 2F2 1G2 2H8 3H5 2D5 3E6 1C6 3B8 1E8 3F4 1I4 2I6 6B6 4B4 4C2 5D4 4F5 4D6 6F8 5I2 6H4 5G8 7B2 7C8 8E4 8D8

210: 1D8 1B3 6F2 1F1 3A1 6A4 5F6 5D4 2F4 **cEc q69r8** 8B8 6C8 4C3 **cBc c5r s68** 2B9 4A9 5B7 4D7 1E7 3D9 2D5 5E9 4H1 4I2 9A7 **h13 o6G1HC u918r2 u935r5 x2 r8E g9b a95 a35 eHBc2 dCc c9r** 8D2 **o7H1GC x6** 2C6 3C7 3B4 1C2 1A5 3H2 3I5 1H6 2G7 1G9 5H5 6G6 5I8 6I9 7B2 7C4 9C5 8A6 7D6 8E1 6D1 6E3 9D3 7G1 9G2 8I3 8G5 9I6 7I7 9H8 7H9

211: 3B4 5C2 6B8 6C7 2B7 6A3 9A1 8F7 9B6 **a13 a46 a59 a75 a79 cFc** 4D2 2F1 3F8 5D8 4H8 5H6 4A6 5A4 5G7 9G8 **d1r q58r1 e76r1 fHc qBIc2 a82 q58r5 u358r5 x3 cDc**

c2r h36 2D6 3C6 2C3 1D3 3D7 1H7 **p358r5** 2A5 1A9 **o1G8Hc dIc r9E** 2E9 1F2 3E5 2H2 1G5 6D5 5E1 6H1 4I4 6F4 4F9 5I5 6G9 7D1 9E2 8E3 7B3 8B2 9F5 7C5 9C9 8I1 7G2 9H3 3I3 3H9 7H4 8H5 7I9

212: 2B8 1F8 2F3 1C3 2C6 5H8 6D8 5G3 7A8 4F5 6B3 1E9 **a17** 2D7 **a19** 2H9 **a61 bIc1 o6A3Bc c6r** 6F1 5I1 **a64 q27r1 cGc** 1G2 **c8r e83r1 c7r a84 p169r7 v2468r4 x6** 1I6 1H7 **x6** 9H3 8A3 **eFAc6 o9A4BC r7E** 2E4 3D1 2G1 3H4 2I5 7E1 9D2 6E2 5C2 5A5 3C5 3B7 3A9 4B6 6A7 5B9 6C4 5F6 5D4 4D9 4G7 4I4 6I9 7B4 9A6 8C7 9F4 8D6 8H1 7I2 8G4 7G5 7H6 9I7

213: 6D6 5G5 2E2 4G2 8H2 **a28 a54 a59 a69 cAc** 2G9 4E9 8D9 **f3r q48r1 t6Cr dCc** **h29** 6C2 3B2 3C9 6B4 5F4 **r4A u348r1 x1 x3** 9D7 **d9b u517r7 a67 c5r c6r cFc e96r3 o8A7Dr bIc3 q71r5 eDCc5 x3** 6A3 5B9 4A6 1B6 5C1 4F1 5E3 4I3 6H9 7C3 8A5 1C5 2F5 6E5 6F7 7B1 9B8 9A9 8E1 8F3 7D5 7F8 9H3 8I8 1H8 3E8 1E7 2H1 3A1 2A7 1D1 3D3 2D4 1G3 2I6 5H6 5I7 3G7 3I4 8G4 7G6 7H7

214: 6G7 7A4 9F6 7E8 5F8 9I8 8H3 3I3 1E3 7H1 **a29 a64 c1r cDc** 9D1 8D7 **q14r6 uFDIc2 x6** 5I6 **c7r d3b h68** 1A8 3C6 1H6 3H8 7G6 9G9 7C9 **b9r2 b9r5 dBc** 2A9 **o5D6Hr p167r2 s68 t4Er dEc t5Ar** 8B1 8A6 4B6 5B9 6E9 3D9 4H9 6I2 4E2 5H5 2G5 3G4 2F4 2H2 3A2 2C1 2B3 5A1 4A7 6C5 6F1 3E1 3F7 5D4 4F5 1D5 1F2 5E7 6H4 9B2 9C3 9A5 7D2 8E5 8G2 7I5

215: 2E1 1G4 6G5 4G7 4H9 6H8 6I1 3H1 1H5 4B1 2G9 1A9 **a18 a47 a62 a63 fDc** 8D1 9A1 **uAEHc4 a44 c4b h47 c6r qFAc2** 2A2 8A3 **x3 x3 x6** 3I7 **c1r e91r6 pCEFc3** 3B5 **o7B8HR** 6E4 5A4 6A7 5D7 3D4 **o9B7Hr r6D** 1E7 **r9B** 9F8 1D8 1F2 4E8 8F4 7F7 8C7 7B2 4C2 6B3 3C3 3A8 1B6 2D3 3F6 1I3 2H6 6D2 4F3 4D6 5H3 5I2 9B4 7A6 7C8 9C5 7E3 7D5 9D9 8H2 7H4 9I6 7I9

216: 4A4 6E6 2F6 6I3 5D3 7B1 9B6 8A7 7H6 4E1 3D1 6A8 7G7 8H8 9C8 7E8 1D8 **a72 a92 o5A6Hr u347r5 v3478r5 b1r5 cIc** 3F4 **cCc o6C5Hr r5H** 2A3 **x5** 3I8 4G8 **e74r5 o3E7FC p268r2 x9 r1E** 9E2 1F2 2C2 1B4 1C5 1A1 1E3 3G2 2I4 2H5 3E5 1I7 6C1 5B5 6B9 5A2 4F9 6D5 5H1 6H2 4I5 5G9 8B2 8C4 8F3 7F5 9D7 2E7 2D9 8E9 7I2 8G5 9I9

217: 3E8 4B6 6C2 3B2 1H2 6A3 5B1 5C8 9A8 7A1 8H8 8C6 **b1r6 dFc f9r a81 a21 flr r7F a67** 4D5 7E5 8B5 1C5 **dEc k612** 4E2 6F1 1E1 1F6 4F8 6I8 6H5 2I5 9F2 9E6 **q81r3 s88 t1Gr u159r4 x3 x3 r7C x4 dDc o2B1DR x9** 2B9 3C3 1D9 2F3 3D7 2E4 3A4 2A6 3H6 2H7 3G9 3I1 5D4 5F7 6E9 6G4 1I4 1G3 5H9 9B3 9C9 7C7 8D3 9D1 7F9 8G1 4H1 4I3 4G7 7H3 9H4 9I7

218: 2G4 3G7 5G1 **a39 a19 cIc** 1G9 1I5 **a15 a33 dCc** 3C1 1F1 8E1 **d1b f5r c4b o7D8GR u418r8 x6 x8** 7F7 2E7 8I7 9B7 6A7 7B5 7A1 4B1 7I4 9H5 **b4r6** 4E6 **cAc l24** 5F4 4C4 5A2 4D2 3F2 1H2 3H3 8C2 8A4 2D9 3A9 2A5 3E5 6F5 **p148r8 q29r3 x3 c6r p268r6 r2C** 6C8 5B6 2C6 1D6 2F3 6B9 4A3 1B3 1A8 5I3 6E3 6G6 5H8 4F8 5E9 4I9 9C3 8B8 7D3 8F6 9E8 9F9 8G3 7H6 7G8

219: 3B3 2E4 3F8 8I7 8B2 9C8 7G2 8C9 7C4 7A3 **a16 a37 a76 bIc9 c9r d1r a11 fAc** 4D7 5G7 **mIc q71r1 q71r9 a29 s68 x1 fFc o4F3Dc d4r uBAFc5** 6C7 2A7 3H7 **k645 c6r r3D** 2F5 3C5 2C1 3D2 3E6 2I2 1I5 3I1 2H9 4F2 5A2 4A8 6D6 5D5 6A5 4B4 1A4 1B6 6I4 4I6 5I8 5H3 6F3 6G9 5B9 6B1 4E9 5E1 4H1 9B5 9A6 8E3 8F6 9G1 7F1 1D1 1F9 9D9 9I3 9H4 7I9

220: 2D1 1H5 7A9 7H8 4D8 4E4 5F5 6A5 9A1 **a34 a72 b4r1 bIc2 cFc c4r f3r cBc** 8C2 **u149r6 x3 o8E9Hr eHBC3 fHc a39 c8r** 8D5 **o2G1AR q91r3 dDc** 7E2 **a83 d1r p149r6 t3Ir o3G2Br a36 c3r x7** 1A7 2B6 1C3 2C9 3B8 2A2 3F2 3E3 1D6 1F4 3D7 2F8 1E9 2H3 2I4 3G6 2G7 3I9 6B2 4A6 6C8 5C1 5B4 6E1 5D2 5E7 6D9 4H2 5I6 6H7 5H9 8B3 9C4 7D4 9D3 8E6 9F7 7G3 8H4 7I5 4G5 4I1 8G1 9H6 8I7

221: 4C6 8C1 a44 a48 a61 cFc 4D8 b4r2 cIc c6r dEc a52 2D4 3D6 8D9 h17 6H1 5E1 6E7 5G7 q59r3 q91r9 r1E 1A6 r8F 8G6 8B7 s68 d3b a32 o2B1Er 5A8 2A1 3I1 c3r e83r8 h45 uCFHc5 a45 o7C9Hr x3 5D3 6D2 4F5 5H5 6C5 7F3 9D5 7B5 3A5 3B4 5C4 5B2 1C2 2C3 3C7 1B9 2B8 3F2 1E8 2G2 1H3 2I7 3H8 3G9 4G3 4H4 4I2 9A4 9B6 7C9 9E2 7E6 8F8 8H2 9I3 7G4 7H7 7I8 9H9

222: 1A3 6B1 4D8 5I1 8F1 3A2 9I3 a69 cHc f2r gEc a27 q38r8 7C8 c7r q71r4 r1H r3B t8Hr cHc h16 9H1 2G1 2H6 t9Gr uDAGc6 a56 uFBGc9 2D7 o1H3Br u837r7 c9b dIc u937r7 a77 x9 3I9 1H8 2E8 3B8 1C7 2B9 2F3 1F9 1E2 3D4 2I2 3G7 6E3 4G3 6G9 9B7 8G2 7G6 8H7 7E7 8I8 4C9 6C2 4F2 6D6 9G5 1I5 1G4 7I4 7F5 5D5 4B5 5C4 5A6 6F4 5E9 4H4 6H5 8B4 8A5 9C6 9E4 8E6 8D9

223: 2A5 2F9 2D8 6E5 6H3 9E6 9I5 7D5 8I8 7G6 8B6 2C6 8F7 8D3 5E2 1H8 9H9 9G7 2H7 1E7 7F2 bIc9 cFc dIc x1 uCDFc1 x4 f4r cGc p359r1 q61r1 a31 s48 2I2 a34 s48 fBc c6r o6A9Cc r4C 4F3 5F8 6G8 4C8 5G9 6C9 6A2 1B2 1A9 9C2 9A8 9B3 5A3 6B4 3A4 3C7 2B1 3F1 2E4 5C1 4A6 5B7 4E1 5D4 6I1 1G1 1I4 4G4 5I6 4I7 7A7 7B9 9D1 9F4

224: 7B4 9D8 a77 a92 a96 c2r 2D4 c2r cGc c4r fGc q43r6 s88 d1r a31 fHc m1b cCc uBDHc1 x3 9E9 2F9 2E5 8H9 9I4 1A4 a11 9G1 6H1 4G7 1H7 2B7 3B8 3C9 1B6 3D6 1E3 3G3 3H4 2G8 4C6 5G4 5H8 4A8 7H3 4D9 7D1 6G5 a87 c7r d8r l26 dFc e86r3 r6A 6D3 5C3 5D7 6A7 5A2 2C2 1C1 3A5 2I1 3I2 1I5 5B1 6B9 6F2 5F5 5E6 6I6 5I9 8A1 8B3 7C5 9C7 7E2 9F3 8D5 8F6 7F7 8G2 7G6

225: 2F4 3G2 3I5 6A1 7I1 2A3 1I3 3E1 8A7 bIc8 8H6 6I6 8C5 8B4 cBc d5r gFc q17r6 e93r6 t2Cr u916r2 x7 x7 7H7 x8 3B7 2D7 o4E6Cr bIc2 f9r a79 p259r9 q63r9 1B9 3C6 2C8 1E6 1F2 3H8 2I9 4I8 6B8 5B3 4B5 5I7 6C7 4A2 5C9 6E2 6F3 3D3 3F9 4E7 4D9 5G4 6H9 9C2 7B6 7A9 7D2 9E3 7E4 7F5 5D5 5F1 8D1 9D6 9F7 8F8 8G3 9I4 7G8 9G9

226: 2F2 1D6 6B6 4E8 6E2 9B8 1C8 8E4 8F1 9F6 8D9 4F9 6F4 4D7 6C7 5D5 9E7 3F7 7I6 8A6 a39 a43 a45 bIc3 c1r h13 qHEc2 e94r2 o5A3Cc 5B4 o3C7Bc q18r7 7H4 3I4 4G4 fGc a37 p134r1 o2I3AR u936r5 x5 o9A5CC r7B 7A7 7B1 3C1 1B9 2B7 1E1 3E3 2A3 3A5 2G1 1I3 2I5 1H7 2H8 3H9 5A1 4B3 4C5 5C9 4A2 4I1 5H2 5G8 8C2 8B5 9A9 9I2 9G5 6H5 6G3 8H3 8G7 7G9

227: 1D8 4A3 5E2 5D3 9B4 6A4 5H4 4D4 4E7 a12 a48 a65 cFc a59 dBc 4B8 a71 flr b1r1 bIc1 q28r3 a93 q52r6 o1I4Hc x6 6H8 a66 2I3 8H3 pCFHc6 x9 t9Ir 9G1 c9r 9D7 8I7 7B7 8B5 h39 3F3 9E3 9F9 a29 uHACc9 1I1 4H1 r1H 9C2 1A2 8C8 8A9 7A1 8E1 2D1 3B1 1C9 2B6 2E9 1E5 3E4 1G4 2G5 1H6 3H9 3I2 3G8 4C6 5B9 6E6 6D9 4F5 6I5 5I6 4I9 7D5 7F6 7H2 8G6 9I8

228: 1E7 3B7 1G1 7G4 8I8 6E4 a33 a35 a72 a76 bIc5 bIc1 d5r a45 dDc 1D8 2A8 2C4 4E8 a59 fAc o1F6DC q51r3 2H3 a36 r6D t1Br t8Er x2 t8Hr d9b t9Cr r9G dAc c7r eHAc9 cEc c8r pADHc2 3I5 1A5 e51r3 r3D 1I6 2B6 x9 3A9 1B3 3D3 2F2 2E1 1F9 3H2 2I9 4C3 4B9 5E2 6B2 5B5 5F3 6F5 6D9 6G3 8A3 9C9 7C5 8C7 7F1 9D2 7A2 9A6 8E5 7E9 8G2 4I2 5I4 4A4 5A1 4D1 5D6 4G6 5H7 9G5 7H6 9I7 8H9

229: 1C3 2C2 1F2 5A5 3C5 2E5 4I2 7A4 9A2 7G2 a64 c9r f4r a67 j78 o4D2Fc a27 p148r9 r2G 2F9 3B9 3D4 2G4 6F4 4D9 4H4 5I9 uHCEc1 u579r3 a63 a43 uGACc7 v2679r7 x6 3I6 3G1 7I1 9I8 9F7 6I7 5G3 7F8 5B8 3A8 2B7 1G7 3E7 1H9 2H8 4B6 4A3 4C7 6C1 5H1 4E1 6H6 5F6 7B3 8A7 8C8 8F1 8E6 1D6 1E8 6D8 6E3 9D3 7D5 8H3 9H5 7H7 8G9

230: 1E3 2G3 3I7 3H2 3G5 5A3 4F7 5F5 4G4 8A2 9B3 7C7 6B7 7H3 7F2 c9b q68r5 9H5 6I5 4B5 5I2 6D2 8C5 8I9 1H9 2C9 9D9 4E9 a41 u518r4 a54 x6 4A6 cDc c5r h46 cEc eEAc8 s68 o1C3Dr p129r6 t2Fr b1r8 x8 2B8 3B1 1C6 3A4 1F4 2F1 3D6 3E8 2I6 1G8 1I1 6C4 5C1 6A8 5E6 5D4 4D8 6E1 4H1 5H8 8B6 9C8 7D1 8E4 9F6 8F8 8G1 7I8

231: 1A4 3I4 3G9 2E9 2I6 6B9 5E4 6G2 5H8 6A8 6F6 1H5 **a31 a37 cHc d8r b8r3 cBc qBGc2 a82 g7b q74r6 t9Gr u725r1 x3 x6** 5G6 7H6 8G3 4H7 **a47 bIc7 b7r7 I17** 8A7 9G7 1I7 1G1 8I1 4A1 4C6 3B6 5F1 9A6 4D3 5I5 6I3 **o6D3FC q39r8** 8D4 9H4 8H9 9F9 **e93r8 o8F3DC r8F** 1F3 3D8 1B8 2C2 2B1 3C7 1E2 3F5 2D7 5B7 5C3 6E7 6D5 7C1 8B2 9B3 9C8 8C5 9D1 7D2 7E3 9E5 7F7 8F8

232: 3A7 1E5 6F6 5H5 5E3 6E2 4D7 4F4 8E7 9I5 1I2 2C2 6I3 **a29 c8r d4r e83r6 c3b s78** 1D6 3C6 2G6 2H7 3H1 6G7 7A6 8H6 4C3 4B5 **c7r a99 cGc q16r4** 5G4 4H2 5A2 7G2 **uACHc8 o6B1Ac r1H v2378r8 t7Dr a83 c7r x8** 3B8 2B3 1A4 1C9 3F3 2D8 2F1 3E9 3I4 1H8 6B4 6C8 6A1 4A9 4G8 6H9 7C1 8C5 9A8 7B9 9D1 7D3 8D4 7F5 7E8 8F9 9H3 7H4 8I8 9G9

233: 1B1 3F5 3D3 5A4 6A1 5D2 2E2 5F1 3C4 **a26 a59 a63 q53r6** 2C6 2A5 **a17 f7r o8B3Ac a79 g9r t1Gr q35r8 uDAEc8 x7 dHc** 6G3 **a68 r6H** 5G8 **a69 x7** 1F6 7E6 **x8 c7b q96r8 x8 r8E** 8H3 9H4 8E4 1D4 7H1 9D1 9E9 4D9 **a87 h79** 3A7 1C9 3B8 2H8 1E8 2D7 1G7 3G9 3I2 3H6 6F8 4A8 4C3 4B5 5B6 6B9 6C2 4E7 4I6 6H7 5H9 9B2 7A3 7C5 8B7 9C8 8A9 9F3 7F7 7D8 7G2 9G5 9I7

234: 2D2 2I1 3D1 5B5 5F1 6E2 4H1 7C1 7G2 9A2 2C5 7A5 9H5 1I5 3E5 **a26 a38 b3r9 b5r8 x4** 5G4 5I8 8H8 1G8 5E7 **a87 a93 a99 i67 t6Cr t9Br a78 cFc f6r t9Dr u916r3 uEBDc4 x4 c4r s78 c1r dDc eDBc4 e61r9 pCDHc3 cBc r7B** 2B7 1C3 1D7 2F9 2G3 1H9 6H3 4E3 6D9 4G9 7B3 8C4 4B4 6F4 1E4 1F6 4D8 6A8 8A7 6C7 4A6 3C6 3B8 3A9 6I6 4I7 9C8 9B9 9D3 7D4 7E6 9F7 7F8 8E9 8I3 7I9

235: 3G2 2A2 1G8 3I9 5G9 8D6 8H4 8G5 6H5 8A8 3C8 **cBc** 3B5 **dAc i36** 9G7 6G3 9A5 7E5 **d7b t9Er u357r4 x1 d5r k637 x7** 1H6 3E6 1E9 **a24 c9r q92r1 a31 o6D3FC p368r1 s48** 2E8 **a23 x7** 1B7 3A4 1D4 6C7 5B1 5C2 4B4 6D1 3F1 5E4 5F7 4E3 5A3 4A6 5I6 4I7 8C1 7B2 7C4 7A7 9C9 9E1 9D2 7F3 7D8 4F8 4D9 8F9 7I1 2H1 3H7 2D7 3D3 2I3 9H3

236: 3B1 2B6 1H8 9C8 9B9 8F8 5D8 6G8 8E2 **a37 a77 a84 a86 dIc a35 a66 f7r** 9G1 **dHc bIc3 o2I3Fr t9Dr u135r2 uEAIc9 a59 c2b** 2D4 7F4 1D7 **x3 cBc uCBEc5 c1r eICc2 q71r5 pBCEc5 x3** 4G3 4C4 1B4 5A2 2C2 3G2 1F2 3F9 2G5 1C5 2A3 1A9 3D5 1E3 3H3 2H7 2I9 6B3 4I2 5G9 4E9 5H4 6H1 4A1 6A7 5B5 5E1 6F5 4F7 4D6 6I6 7C3 8A5 8B7 7D1 9D3 7E5 9F6 8I3 8G4 9I5 8H6 7G7 7H9

237: 6A2 5B4 6D9 6H5 4F5 5I6 4I1 4G2 8B5 8E9 8D2 7E6 9B6 3A6 1A5 3D5 7A3 8G6 8I4 1G4 9F1 **a77 a78 q41r7 s88 x3 a53 c5r cEc eEBc7 h13 t8Hr u925r7 a97 c9r dDc pBFHc3 r2E a38 q41r8** 3E2 1I2 **r3I** 3B3 2E3 1D1 2C1 3C4 1C9 2D4 1E7 2A7 1B8 3F8 1H3 2I8 3I9 4B7 5A8 5E1 5D3 6F7 4E8 5H7 6G8 6I3 8F3 7F4 7D7 8C7 7C8 9D8 9G3 9I7 8H8 9H9

238: 3C8 2D4 1G2 8E9 4G9 **dEc a81 e85r8 qIDc2** 5F2 9E2 7B2 4A2 8D8 4E8 5H8 9I8 **p159r7 q76r4** 4H4 7G4 8A4 6C4 6A1 **q47r3 a83 t6Gr u917r1** 8B1 1C1 7D1 7F3 9C7 **c9r s18** 4D3 6E6 **q53r6 u359r5 x5 x6** 5G6 **b3r6 e95r5 a15 e74r5 d3b x6** 3A6 2F6 1D7 2B7 3B5 2H5 3G1 2E1 3E3 1I6 2I9 1A9 2A3 1H3 4B6 5A7 4C5 6F7 5D5 6G5 6I3 4I7 9A5 7C6 8F5 9D6 9H1 9G3 7I5 8H6

239: 3C3 1B7 1A2 2B8 2A5 3I7 9H1 7B1 3E5 3D2 8B4 8G8 5I8 4C8 4A4 6H4 **a36 a79 d8b** 9F3 1F1 **c5r** 5C7 **dDc a53 j25 q76r5 u967r2 x2 dEc x5 x6** 2D6 1D3 1E8 2E9 2H3 7D8 **d4r p458r2 a72 o8H9Cr r4H c9r eGCc5** 6I9 5A9 6A1 5D1 5E4 4E3 6D7 5G3 4G7 9D4 9E7 **r6C** 5B2 5F5 **r6G** 8F6 6E6 4B6 6C5 4F2 6G2 4H5 1I5 1G6 1H9 9B5 7C6 9C2 8C9 7E2 8H2 7G5 9I6 9G9

240: 6G7 5H6 6C6 6I8 8C5 7D6 8A6 3B6 2B8 1G6 3G8 9D8 1F8 9E9 7G5 9G3 6F4 6D9 7E4 **a14 a82 q34r5** 5D5 3E5 2H5 4I5 **bIc1 r7F u357r1 x1** 4H4 5B4 9B7 **c1r r5F c3b**

eGEc1 p129r1 s48 c3r q35r3 t1Ar eFCc3 t1Ar eIAc9 r5A a12 r5C 1I9 2G4 1C4 4G9
5A9 5C7 4B3 4C2 5F3 1E3 3C3 2C9 3A1 2A2 1A7 1D2 2D1 2F7 3F9 1H1 3I2 4E1 5I1 9C1
7B2 7A3 7F1 8F2 8E7 8G1 9H2 8I4

241: 3I8 6G4 5D4 9E4 7B4 1A4 2I4 8E7 2E2 2F5 9D5 3C5 5C2 9C9 a31 a37 a43
c1r 3B2 q57r6 q14r9 uGAEC6 x2 cHc 5H9 a61 d5b e63r9 d4r cIc 6I1 h17 r5I 9I3
o9F8GR 5A1 p257r7 pAEGc6 9B8 bIc6 r8G 8B6 3A6 1B9 1F6 3D9 3E3 6A9 4A8 5B7
2C7 2B1 6B3 4B5 5F3 4E6 6E8 4F9 6D2 4I2 1H2 1I5 6H5 5I6 4G7 3H7 3G1 9A7 9F2 7F1
8C1 7C3 8D3 7D6 9H1 8G2 9G6 7I7

242: 3D5 4C1 5A5 6B6 4A8 5F6 4E9 6G9 8A9 7D6 8D1 9G5 8C5 2B5 3B3 a14 a72
a77 d3r 3C6 2H6 2G8 a37 bIc7 b5r7 u823r2 x3 x4 o7F9Hr a93 8F7 3F8 9E8 7H8 7F9
9H9 3I9 3H1 pAEIc2 v1269r4 x4 8H3 eIEc3 r4G 7G1 5I1 4G3 2I3 5E3 6D4 1F4 1D3 4B4
6A7 2C7 2A4 3A2 2E2 3E7 4D7 4H2 1G2 1H7 5H4 5G7 9C4 7C2 7B7 9D2 9F3 8E4 8I2 7I4

243: 6F7 4G6 5E6 2D6 6G5 2I5 4E5 7F1 8H3 6D3 4D1 a64 a69 c7r eIDc9 8A9 r9F
a59 r6E 6C9 o8B4AC d3r cAc f7b q37r7 uHCFc2 w1A7 a17 x2 x4 5F9 4H9 p349r4
x8 3A8 2H8 3H2 3I7 2B7 2A1 2G9 3D9 1G4 3B4 2E4 5A4 4F4 6E8 1F8 1E2 2C2 2F3 4B8
4A2 6H4 5H1 6B1 8B2 9C8 9F2 9D4 7E9 7G2 9H7 7A7 7B3 5C3 1A3 1C5 5B5 9A5 9B6 7I6
8G8 9I9

244: 1H7 2G1 5E4 4H2 6G5 5G7 4D7 6C7 5H8 7B7 8I5 8G6 cFc cHc q24r6 x1 o8A7Hr
5B1 6E1 x6 q51r6 eIDc6 t3Dr x9 a19 dBc 3E5 uEBIc2 x2 3G2 7I2 c2b i38 r2E s48
a13 5C9 4F9 3D9 2B9 3B6 2F3 1C3 1A4 1B5 2C2 1E2 1F8 1D1 2E6 3H3 1I6 5D6 4E3 6A3
4A6 4C5 4B8 5I3 6H6 9B2 7C4 9A5 8C8 7A9 8A1 9F1 8D2 9D3 8F4 9E9 7E8 7H1 7G3 9H4
9G8

245: 1B2 1D4 3I7 5A5 1C5 5F3 6F4 5E7 7D5 8B5 7B4 8H4 5G4 9I5 2B3 2C7 4B7
a39 a82 cDc s78 1H9 uDBCc6 x1 x6 1E6 3D9 a86 dFc a81 pCEFc1 q67r9 a99 7E8
o4G7Ic eIAc1 x8 cIc r1A 3B6 6B8 p348r8 a38 9G2 6I2 4D2 6D6 4A6 6C1 1A1 3C8 2D8
3F1 2G1 1G8 1I3 5D1 4F8 6E9 4I1 5H8 4G9 7C6 8C3 9A8 7A7 8E1 7F2 9F6 8F9 7H1 7G3
9H7 8I8 7I9

246: 2A7 2F2 4C2 5D7 8B1 7E3 a26 9I6 7B6 2C6 a43 a49 a56 c1r 1B3 6C3 5C8 bIc5
c9r 4E9 q93r9 2B9 6A9 5A1 5G6 1H6 1G2 7H2 8D2 7F9 h45 r3I r8I s78 a24 uFCIc4
x5 cDc 3D6 6F6 c6r bIc5 cFc e62r1 eIFc5 pCFIc4 d4r r9H 8I3 9H5 4I5 6D5 5B5 6B4
4F4 5H4 3I4 1A4 3C5 2E4 3F1 1E5 3E7 2H1 4G1 6E1 4D8 4H3 3G3 3H9 6H8 8C4 7A5 9C9
9D1 7D4 8F5 9F7 9E8 8G9

247: 2C1 3A7 1F8 5B1 9B4 a63 f9r 9H8 fGc h17 9F1 7E7 6F7 5D5 7G1 9G7 r1B
eDCc2 u728r3 c9r a76 bIc6 q91r9 r3C p278r3 4I3 4G4 8I4 b4r6 c9b eIBc2 6E8 5G8
4A8 o9A7Fr r6B 1A5 cIc x9 1B9 2A3 3C2 1D3 3D6 1I6 2G9 5C9 6C6 6B3 5A2 6I2 6G5
5H6 7B2 9C3 7A9 9A6 8F3 8E9 3F9 2F5 2E2 3E4 2H4 3H5 4F2 4E6 9D2 7F6 8H2 7H3 7I5
8G6 9I9

248: 3A7 2D7 6A2 5D5 6G7 9I7 7C1 1C4 3C2 3D8 a22 a23 a39 cAc c6r c2b eIDc4
fIc t4Dr 1E3 1D2 8E2 8D6 bIc6 d7b a79 d1r eIBc8 c2r r1F u438r1 c5r h36 o8I4Hc
6H9 6D3 p156r1 x5 r9E r7A 7F8 a85 fGc h25 7G2 2H2 2G5 8H5 7A5 3B5 1B9 1F5 3E1
1G1 2I8 1A8 1I6 3I9 6F1 5B1 6B4 4D4 4E9 4H1 5G4 4G8 5H6 4A6 5A3 4I3 8B8 9A9 9F4
9E5 7D9 8I1 7I4 9G6 7B6 2C6 2B3 9C3 7H3 9H8

249: 5C6 4F2 9C8 5E3 6A3 5D5 4H3 4G8 6G9 a54 a57 a61 e83r8 dDc f7r 9H9 1D9
2D1 9D6 7H6 8I8 2H8 3D8 3F3 8D3 7E8 b3r5 o3A7BC qHBc2 t1Cr t6Ir uEAGc4 x2
6C2 a12 cIc c1b c9b e93r7 2F7 2G6 1E6 pAEGc4 r1G 8G5 3I5 9E5 1F5 2B5 2A2 1B4
2E4 5A4 5B9 6I4 4D4 6D7 5H7 3G7 1C7 3A1 1G1 1H2 4B7 4C1 5I1 5G2 7B1 8B2 9A7 7A9
7F4 8F9 9I2 9G4 7I7

250: 6A7 7B7 a22 a27 8F7 a58 dFc d6b 2G4 6H3 mDc o7F8Gr u328r3 x3 1I3 9I7 q51r9 r8G x9 5A9 c5r x6 x9 4I9 7I6 a99 cGc 7D1 6F1 a84 a98 h18 3H9 2E9 1C9 1A4 7C4 7F9 8D3 3F3 2B3 7G3 8G9 bHc5 o6C8AC q68r6 a76 r6C t3Br 8A2 8C6 7A8 9C5 2A5 9E2 7E5 9F6 6E6 9D4 5F4 4H4 5H6 8E8 2D6 1D7 3D2 1B2 3B8 3A6 2C1 3G1 2H7 1H8 4A1 6C2 4B6 5B5 4C8 4D5 5D8 5G2 6G5 9H1 9G8

251: 1B9 6A6 5F5 3C6 5H4 1I4 8A5 8F7 1D7 6E7 4E9 5A9 5C7 4D4 9F6 a51 r5B x2 c4r 6F1 t6Br 5G2 4H1 5B1 4A8 c1r q17r1 t9Cr u714r3 x2 r3E o9A7Gr p147r3 c7b e71r8 dHc b7r2 t3Dr d2b x8 2C8 1C5 3A1 3B4 2E1 2D2 3E5 1G1 2G5 4F2 6B2 4C3 6D3 1F3 3D8 3G3 1H8 7C1 9C2 9B3 7A4 9A7 8B8 7E2 9E4 9D5 7F8 9I1 8H2 7H3 8I6 2H6 2I9 6G9 6I8 7G7 9G8 9H9

252: 3B8 5F8 6H2 4I8 9C8 7G8 8C1 2C6 3F7 5G7 4D7 7F1 9H1 1I1 2E1 2H5 1D5 6F5 5I5 4B5 a33 a44 a82 3E2 a86 a93 q41r3 q92r9 u538r4 c6r a69 pCEHc9 v3568r4 bIc4 c5r eEAc3 r1E a14 1G2 1B7 x9 2B9 2A2 1A3 1C4 2F3 3D4 1E9 2G4 3I9 3H3 5B3 6B1 4A4 4C9 5D1 4E3 6E6 5E4 6D9 6I4 4H6 5H9 8B2 9B6 7A9 8A7 7D2 9D3 9F4 8D6 8I3 8H4 7I6 7H7 9G9

253: 5D6 5F9 6I6 7F3 5H8 9G8 9H9 4F4 6F8 a53 2D3 2F5 a64 a88 a95 c4r 4G5 c6b bIc7 t9Er uICFc1 x1 7C1 7B8 3C8 1D8 3D9 1G9 2G7 8E8 a24 a91 h14 c3b q51r3 t3Br u519r7 x2 x2 qAHc2 eIFc2 f8r u846r7 t9Ar 6B5 eIBc3 o6A1BC x7 1A7 5B7 6A3 1B3 3H3 1I2 5C4 4E3 6E7 5I3 4H7 8C7 8A6 3B6 3A4 2C2 3E2 1F1 2E4 3G1 1H4 4B2 4C6 6H1 6G4 9B4 9E1 8F2 8D4 9D5 7A5 9A2 8I1 7H2 8H5 9I7

254: 4F9 5H4 7C9 9E9 4D6 b4r8 f9b g6r a52 a42 a55 cIc q28r4 7B4 2A4 2E3 r6B u915r3 u915r7 x3 d4b s68 8G3 5I3 4B3 6B2 5C7 3B7 1D7 6G7 6H9 1G9 6I5 9A3 1C3 3C5 1A6 6C6 8A2 8C1 9B5 9I7 8F7 8D4 3F4 5D5 5E2 9D2 a36 e81r5 o1H7Gc x1 5A1 6A8 6D1 5F8 3D8 r7I 2F6 1E5 3E1 1H1 2G5 3I6 3G2 2I8 4H2 4G8 7F5 9F1 7E6 8E8 7G1 7I2 8H5 9H6 7H8

255: 3F1 1E6 3E3 1D8 4F6 9F2 1B4 a57 g4b a48 a49 3H9 c9r d7b r9A 9E8 8D9 9A9 2C9 7C1 4A1 8C8 9G1 1H1 c7r 7F7 s58 cAc qADc2 q52r5 3D2 a25 cGc c1r bIc3 6G4 6E9 4B9 5B8 e62r2 e85r6 s58 u638r7 p145r7 x5 1A5 3B7 2F5 2D4 3G5 1I7 5A7 6B6 4E4 5D5 4D7 4I5 6I3 4C3 2A3 1C2 2H2 1G3 6A2 4G2 5H6 6H7 4H8 9B5 8A6 7A4 8F4 7E5 7H3 8H5 9I6 8G7 7G8

256: 1B6 6G2 8H6 9F4 a18 2I8 fAc bIc3 o8A7Er qGBc2 a22 f2r q27r1 q94r5 uBEIc1 5A1 4A6 6A3 5D6 2E6 2D2 9A7 d4r a55 cDc i45 t5Gr t6Cr x1 1C3 8B3 x1 1D1 1F8 6E8 5H8 8D8 7B8 3A8 3C2 8A2 7E2 a25 a63 e72r1 uHBDc4 r3I 3B4 2C1 3I1 9B1 8E1 8F7 4E7 5F3 3E3 3F5 2F9 2H3 2G4 3H9 4G3 4I9 6B9 6H4 5C4 6C7 4B5 4D4 6D5 5G7 1H7 1G5 9E5 7G1 8I4 7H5 8C5 7C9 8G9

257: 2H3 8D4 6F4 a97 cIc 5I7 7H7 7I4 7G2 1I2 3E2 1E7 4D2 6A2 8G3 4I8 6B8 a25 a45 a95 a99 bIc9 c7r d4r dCc dHc a36 o4B8AC q72r1 u135r6 pBFGc6 r2F 1G6 1F8 3H8 1H4 d3r h47 4C4 3A4 3C7 4B7 4A5 8A7 u438r9 x1 a41 a51 eFCc1 r2D 2I5 3F5 2D6 3B6 1D9 2C9 2F1 3G9 6C6 4H6 5F6 6H9 4E9 6E1 4G1 6G5 8B9 5A9 5B1 1A1 1B3 7C1 9A3 7B5 9D1 7E3 8E5 9E6 7F9 9H5 9I9

258: 1G2 9E7 9I3 8C3 7H5 8G7 8D6 9D5 1E5 3I5 8A5 6C5 7C2 8F2 a17 a91 a96 c6r 6A2 6D3 2E3 2D2 1H3 1I6 4B3 5E2 5H6 6B6 5B7 6I7 9C6 7G6 9G1 7D1 x4 r2I uABDc9 x8 c5r bIc4 e52r4 t4Ar a48 a78 c4r pABDc9 1C8 o3C2HR q43r9 2H7 3C7 s48 4A4 5A8 4C9 1B9 2C4 2F9 3F1 3D8 1D4 2I1 3G4 3H9 5C1 6F4 4E8 5D9 4H1 5I4 6G9 9A9 7E4 9B4 7B8 9F8

259: 2D4 3E6 3H4 6D1 6F5 1D5 5G1 1I1 3A1 1G9 2G3 1E3 4D3 6I4 9F4 7A4 8F6 8E9 5F9 7H1 8C1 a17 fAc 4A6 6G6 b4r2 dIc e93r5 q37r8 t5Br 6E2 s88 5A2 uCDHc7 x7

8D7 9D8 8B2 o9H4Gc p148r8 r4G 7G8 2H8 1F8 3B8 2A5 1A7 2E7 2I2 3G5 6C8 6A9 6B3
5B7 4F7 5E8 4G2 6H7 4I8 9A3 9B5 7B6 8A8 9H2 8I5 9I6 9G7 7C7 9C9 7I9

260: 5G6 9D6 5E5 cAc 4A3 6D3 8B4 d6r dIc 7I1 8E1 6C1 2A1 4C4 6E4 5A8 3E8 7F8
o1I2Br q93r4 t2Dr 1D1 3G1 5F1 a34 a57 a67 u149r5 3C6 t1Cr 5B7 x2 fGc e73r5
d1r r4G a37 t7Hr 8A7 9A9 a89 p257r9 r4E 1B9 2B8 3B3 1C5 2C7 1F3 3H5 2H4 3F4
2I6 2G3 1G7 1I8 5C9 6B2 4F9 4E7 5D2 2E2 2D9 4I2 4G5 6H9 6I7 9C2 7B5 7D4 9F7 7E9
7G2 8I3 9G4 9I5 8H6 7H7 8G9

261: 3B7 6A7 5D1 9A8 7D7 8I7 9C7 8C1 9H1 6I1 1G1 2A1 3F6 1A5 2B9 2D8 1H8 a12
a99 b3r3 1I4 2F4 bIc6 c3r pADGc2 d5r h26 q68r4 s68 x3 o6E8FC dFc eFBc3 r4G
4D2 1F2 2C2 1B3 1C6 2E3 3D5 3G2 2H5 5A2 4A6 6F3 6E8 6H2 5G6 8E2 8F8 7G8 6B4 7C4
u948r5 7I5 4G5 5F5 4E9 5C9 4C3 5I3 3H3 3I9 4H4 9E5 8B5 9B6 7E6 9F9 8G4 8H6 7H9

262: 2B1 1E5 3H2 2E2 2G8 9A5 9B8 9D2 7E8 a19 b4r9 eIEc1 o4I3GC t7Hr x3 3I3
1G1 3E1 8F1 4D1 9I1 3G9 2A9 8H9 4I9 q95r4 s58 a54 r4F 4H8 g6r bIc4 x3 6E9 5B9
cGc u859r3 a73 eGEc3 dAc x4 x6 1D6 2F4 3D7 2C7 1H4 2I6 5A7 4F7 5E3 5D4 6D8
5C8 6B6 4A3 4C2 6C5 6H3 6I4 4G5 5G6 6G7 8A2 8B3 7F3 9E4 9G3 8G4 7A4 3C4 3A6 8C6
7H6

263: 5D2 4C2 7E9 8H2 2G2 3B2 1G7 2E7 1I5 9H5 6D7 4H7 6H6 7G6 a23 a39 a45
a56 a68 a94 b9r1 c9r d4b a46 d8r 8F7 fCc o6C2BC q84r1 t8Ir u627r3 x8 c7r 8E1
pCEFc8 s48 r5A 6C3 2B3 5A4 4A6 6F4 5E6 4E3 4F5 3E5 5F1 6E8 4I1 8A3 9B4 9C1 1B1
7C8 1A8 1C9 3F8 3D3 1D6 7B7 5C7 5B5 8C5 8B6 9A9 7F3 9D8 7H1 9G3 5I3 5G8 5H9 3I9
2I6 3C6 2C4 3H4 7I4 8I8

264: 1A7 5B3 3C3 2H3 8F8 8G3 7E3 4C6 6H6 3F7 3E2 4E5 4D7 8E7 a18 a54 a95
pBDIc1 bIc1 q38r6 a76 bIc6 t2Dr 2F5 t7Fr eFCc9 o8I9Br x2 o6G4Ar x9 o2A8Bc
r8D 3D6 c2r h46 8B6 2A6 2B4 7A4 cFc u439r9 5A9 5F2 5E6 6D1 1F1 2D9 2I1 4B1 6F4
5G1 9E1 8D4 9F6 7F9 9B9 1C9 8A2 6B2 6A5 4A8 6G8 3H8 1B8 3B5 1G5 3G9 7C5 7H1
9G2 4I2 4H9 4G4 9H4 8H5 8I9

265: 2A9 2C4 3I3 1D3 9F3 7G1 9G4 7H9 6G9 5D9 8E9 8C8 8F1 a15 a54 a95 a98
qICc2 t3Dr x2 3D2 2I2 4H2 9A2 7F2 9D6 b4r7 c1r bIc6 s88 o5F4Gr g6r cBc h27 6B2
1C2 1B7 5C7 6C6 6H7 p169r8 uEDGc8 bIc8 x6 2F7 4D7 6D1 6E4 4E3 6A3 5B8 1A8 2G8
3E8 2E6 2D5 1H6 5A4 4A1 4F8 5F6 5I1 5H5 4G6 6I8 7E5 8B5 3A5 3B6 7B4 7A6 8D4 7D8
9I5 9H8

266: 1E4 2G4 4G5 5G9 9D5 7G2 5F4 6D6 5D7 5E3 1D3 a28 a52 a67 a89 bIc1 d6r
6B4 7A4 9H4 q51r8 a38 u915r8 u925r8 v1259r8 x5 r3H 3A3 2I3 6C3 6A9 8C9 9G3 2D1
3D2 1G8 b8r1 cCc x7 4C6 7E6 d9r pABGc7 3H1 8I1 r8A 8G6 3I6 1I5 3B5 1C7 3G7 7C5
9C1 9B6 8A8 5C8 2B8 2C2 4B2 4A7 6F2 5I2 6H8 6I7 8B7 7F1 4E1 4F8 3E8 3F9 9F7 9E9
8H5 7H7 9I8

267: 2A2 1F5 2F1 1H4 1G1 2H3 6I4 8C2 2D8 8H1 a78 a99 d7r dBc pBDIc9 cEc
q49r5 8I5 4H5 5C5 5A1 7C1 9B5 7A8 1C8 c7b x3 x6 x7 d9r 7H9 eHCc7 s48 s48 x6
r3E a68 cFc dGc e96r3 f4r a57 o5E4GR r5E 5I9 3G9 1D9 2B9 1A6 1B7 1E3 3F6 3E2
2I6 3H8 6C6 4A7 4B4 6A3 4F2 4D3 5E6 5D7 4E8 6F9 5G3 4G6 6H7 6G8 8B3 9A4 7B6 9C7
9F3 8E4 8D6 8F8 7F7 9E9 9H6 8G7

268: 1G2 1H3 3I7 6F6 8A6 3B6 3D1 2B1 6C1 5A7 1C7 6H7 8E1 7G1 5H1 9G7 7D7 a35
a39 a52 cEc 5E2 c2b eHCc8 q59r3 8I3 a83 s68 a14 a18 7A3 c1r t4Ir uGCDc4 cIc
x4 x9 3C9 3A2 1B5 3F5 1E9 4A5 5G5 9E5 8H5 2I5 4I9 o9H7BR a74 pCDGc4 r8C 8G9
2H9 2G6 4H6 5I8 6E8 1F8 2A8 1A4 2E4 4C8 4B2 5B3 6B4 4D3 5F4 4G4 7B8 9B9 9F3 8F2
9C2 8C4 9D4 7F9 7I4 9H8

269: 3A5 4B8 4H9 7G5 8E5 5D5 7I3 3H1 2A8 3E8 1I8 7C8 **a36 a43 cIc e85r1 q17r9 r6E uFCIc9 x2 x7 6D7 6E9 5I7 8I2 1H2 1A4 2E3 1D9 h37 o5B3CC 6B6 p467r2 9A6 gFc f8b a84 9H7 o9C3BC r8F 1B7 3C3 3B2 2C9 1G3 3G7 2F7 3I9 2I6 6A2 5C1 5B3 4D1 4F3 5E2 5F4 3D4 3F6 6G1 4G2 7A1 9C2 8C7 7B9 8B4 8F1 7F2 9D3 9E4 7D6 9F9 7H4 8H6**

270: 5D9 5I3 6B3 4I7 6A7 7C3 9E3 3D3 8D7 9B7 3C7 1E7 7D8 8G8 2H8 5C6 6D6 **a74 bIc2 t1Br x1 x1 x4 x9 9F6 8I6 3G6 1A6 9H9 9G2 9A4 a31 a95 eEAc9 r7A dBc r8F 2C4 2D2 3I2 3B8 4A8 c3r pAEGc1 q36r4 t6Hr o4E6Hr a64 7I4 7G5 a65 u635r5 4C5 5A1 6G1 4D1 3F1 1D4 1H1 3H4 6F4 6E5 2F5 3E9 1B9 3A5 1I5 2I9 4E2 5B2 4B4 6H2 5G4 5H5 8C1 8B5 7A9 7E1 8F9**

271: 1B9 9B4 8C6 9H6 **d7r 7G9 6H9 a92 cEc 5E5 8F5 d6r 5H2 8G2 a64 h16 o6A2Bc 7B2 q62r5 a15 q75r7 u279r8 x3 2G6 1E6 7F6 7E1 1C1 x3 x8 4A6 5D6 r5A 5B3 6G3 6A5 2B5 a33 e75r7 w3D8 bIc8 t2Fr 1A3 1G4 4H4 1F7 dFc r3F 6C4 3A4 2A2 3C8 2F8 2D3 4B8 5A7 5F4 4D1 3F1 3D2 3E9 6F2 6D8 5I1 4G7 3H7 3I3 3G5 4I5 8B7 7A8 9F3 8E8 8D9 8H3 7I7 9I8**

272: 2B9 5C2 4G7 8I3 1C3 7F3 9F2 5I9 4E9 4I1 6I2 **b4r5 bIc5 c5r q51r4 x8 x8 c1r 1D4 4F4 5A4 6A3 6B1 5D3 7B4 c8r p167r6 fGc b7r1 o9G8CR r9E a55 u348r6 o2A3Dr c2r dHCc eHDC8 r8D a11 cCc h17 2D8 3G8 3H9 2I4 3C4 2C6 1G6 3F6 2H2 1E2 5E8 6E5 6D6 5G5 6H8 7E6 7D1 2E1 3A1 2A7 3D7 8D5 9C5 8C1 9E7 8F8 9A8 1B8 1A5 4B5 4A6 8B6 9G1 7G2 9H4 7H5 9I6 8H7 8G9**

273: 3C8 5B8 8H7 2E7 1G7 3H4 5E4 4A4 **bIc9 c2b 3F2 2I2 9D2 2F4 8D4 7I4 bIc5 bIc6 c7r fAc a41 dCc h27 6A2 4C7 6C1 6D7 7C2 7A7 q86r6 s88 u359r3 x5 x6 c3r p359r3 2C6 o8I1HC r1A 1D3 2D1 3G3 2B3 1A5 3A1 3E5 1F6 1I1 2G5 3I6 1H9 4I3 6I8 4F8 6F9 7F5 9E6 8B6 5A6 5C3 4B9 6B5 4D6 5D5 4H5 4G1 6H6 5G9 9A3 9C9 9H1 9I5 7G6 8I9**

274: 1A4 2B7 4H7 5G6 8A1 7D7 1F7 8D4 7H9 7G4 6H4 9F6 8H6 5I1 6G3 9G1 9H5 1G5 2D5 8G8 **c2b 1E6 h23 q26r9 e53r9 c6r cEc s78 uFAEc2 x2 8I2 7I3 8B3 o6B7AC t4Ar r7A w2C8 1H8 q15r3 u539r8 cAc d4r r1C 3A8 1C2 3F2 1D3 6B2 5A5 4E2 6F5 7A2 7B5 7C6 2A6 2C3 3B9 2E9 3D1 2H1 3H3 4A3 4B6 5B4 6C9 4C1 5C8 6E1 5F3 4F4 4D8 5D9 9B8 9D2 7E8**

275: 6G9 9D9 8D7 9B7 7G1 4I1 8B1 3A1 8E4 8F3 6D3 **a28 a46 a85 a98 d4r 5G8 6F8 3D8 4F4 2D4 o2G9Ic r9A 4A8 q42r5 s58 u247r3 uHDFc5 x5 9A5 1A6 1G4 3B4 9H4 5I4 3C9 1H9 2E9 b2r5 o3I9Gc e91r3 cCc pDFHc5 s58 1E2 3F5 1I5 2G3 1C3 1B8 3I2 3G6 3H7 5D2 4C2 2B2 2C5 6B5 5B6 4E5 4H3 5H5 6I6 4G7 7B3 8C8 9C6 7F2 7D5 9G2 9I3 8H6 7H8**

276: 1E7 8C7 7C4 7F9 8I4 9I7 5G7 4A7 2A3 1I3 8G3 9B3 1D8 **a36 a85 a88 f4r p124r2 8E2 q81r1 uHAGc1 v1248r1 cIc a38 cIc uAGIc6 x9 cCc d5r 9F8 9H6 6G6 3I6 3H8 7I8 9E1 8B1 d3r d1b d2r r3A 1C6 3A1 1B2 2F2 1F1 2I1 3G2 4C1 5A2 4B6 5F6 4F3 6E4 3F4 2D5 3C5 3E9 5E8 6B8 2C8 2B9 6A5 5C9 4D9 6H1 4I2 5H3 4H4 5I5 6I9 7B5 7A6 8F5 8D6 7G1 7H2**

277: 1F5 5A4 7D4 2E4 9G4 1I4 1C2 1G1 5H1 8H2 **a11 a13 a81 dIc 3H3 3C6 a38 a93 bIc6 c1b c3b o5G4BR q85r5 4E5 6H5 5G8 2H8 2G6 4B8 9C8 r4D s78 u368r9 cDc x7 t8Br dAc h13 7A1 2B1 2A3 x7 1B7 2C9 3I7 1H9 8I9 7B9 6A9 d5r a56 i67 f8r u824r7 9H7 7H6 7C7 4A7 5B6 5C5 6E6 5E7 6D8 5D3 5F9 3D9 3E1 3F8 4D2 2F2 2D7 5I2 6I3 4I6 8B5 9B3 8A6 8D1 7F3 9F6 8F7 8E8 8G3 7G5**

278: 3E1 1B1 5D1 9A1 7I1 6H1 1G6 **a77 a92 a95 1H8 9G8 b5r7 b8r9 8G9 7G4 8E4 8H5 9H2 j37 cHCc r3I 5I8 r9D uFBEC2 uADHC3 x2 x2 d2r f4b a49 6I6 q24r8 o3F4EC t7Br d7b p357r3 b6r3 t9Er 7C7 7F9 8D3 5F3 4H3 3G3 2C3 1C5 2I5 3H7 3I4 1I2 2H9**

6A3 4A7 6B8 2A8 3B2 2D2 2E6 3F8 5C2 4B4 6C9 6E7 6F5 4E8 4F2 4D6 5H4 5G7 4I9 8A2
7B3 9C4 9B9 7E2 9E5 9F6 9D7

279: 1B4 1D2 3E9 1G6 1E1 1F3 4E7 3D7 2E5 3B5 2I7 7F7 8C7 4D1 9F5 7C5 7A9 8I5
5G5 6D5 8A4 9G4 **c4r h49 dCc o4B9Ac qDIc2 a72 bIc2 q49r8 a78 d9r u629r6 x1 x3**
bIc3 p369r3 f5r r9C 7D8 8H8 3G8 **cIc a61 s58** 8B6 7B3 9C1 9E6 5D6 6A6 2C6 3A3 2A1
3I1 2H3 2G2 6B1 5C3 4B8 5A2 6E3 5H1 4I2 6I8 5I4 4F4 6C4 4C9 5F9 6H9 9B2 9A8 8D3
7G1 7H2 9I3

280: 2C2 1B3 3A4 5I4 8D4 7C4 8G3 6H3 **a15 3G5 a55 a98** 6G8 4C8 **bIc5 c2r d5r**
dHc 1A8 8B8 9I8 **c3b c1r u725r9 p168r9 o5E8Fc x1 x7 a77 r5A** 1I6 2H9 1C9 3H8 2E8
3I2 5H2 4F2 6I9 5E9 7B9 8E2 8F9 6F5 9D5 8C5 7I5 4D3 **a76 q17r1 eHFc1 q17r7** 9F3
3E3 3F6 7E6 **s78** 6C1 6B6 2A6 2B5 5A5 5B7 4E1 6D7 1F7 2D1 1H1 2G7 5G1 4I7 9C6 7F1
9E7 8A7 9A1 8I1 7H7

281: 5A9 4G5 4I9 3G9 7H3 7A1 9A5 1C5 3C4 2B1 7F5 5D5 2E5 8G8 9G4 **a56 a91 dFc**
f1r p168r7 t6Er u245r3 a33 a23 c3r t9Dr x2 x8 c1r h46 1I4 2F4 1F6 2H6 9I6 9H1
eHBc8 r5I x2 fDc 9E9 1D9 1E7 **c6r** 1A3 **qADc2 x2 r4D** 6D7 4D6 6E3 3D3 3E1 5F2 2D2
3F8 1B8 3A2 1H2 2I8 2G3 4C2 6A8 6C6 5C1 6I1 6G2 5I3 4B3 5B7 4H7 5H8 9B2 8A6 8C7
8D1 8E2 9F7 9D8

282: 3H1 2H5 4E4 8C5 4A5 8I4 1B1 3B5 1E5 6F5 2I9 3I6 **a27 7B7 a89 f2r q35r8 r3A**
5A7 1C7 6C8 4C1 5G1 6E1 4F2 9F1 **a13 a57 cEc** 2E7 8F7 **s58 a78 uGCFc3 x2 o9H4Gc**
7E9 **b7r6 p167r2 c8r h26 o5H9GC pCFGc3 q85r3** 6I3 2G3 3E3 1A3 2B2 3A8 2F8 1I2
5D3 5E8 4D9 6D7 6H2 4H7 4G6 5H9 7A2 7C6 2A6 2C4 9C3 9A4 9B8 7F3 8D8 8G2 9E2
8E6 8H3 9H6 7H8 9G9

283: 7B4 4C4 8H6 3F3 1B3 3B1 **a18 cFc c8r** 8E3 9G3 5I3 5H4 6H7 **cEc** 5E7 1F7 5F6
6B6 1C9 **a49 c2b o8I7Fr pADGc8 qDHc2 x5 d7b** 2C8 2B7 8C7 **e84r2 s68 v1258r5**
cIc 1G1 **c4r h56** 1I6 2D6 1D5 2G5 3H9 2E9 3D4 2I4 3I8 4H5 6E5 5B5 5A9 4B8 6C2 4E1
5D2 6D8 6I1 4I2 5G8 6G9 8B2 9C5 7A8 8A1 9B9 9D1 9E4 7F5 9F2 8D9 7H1 7G2 8I5 9H8
7I9

284: 3C3 3D4 2F1 3G1 1I8 5G3 8D1 9B3 9C1 6B1 6F4 6D3 7F3 **a44 cAc r4C a27**
u923r5 x9 2B9 1C7 **d8r q68r6 b9r6 o7G3Hc p239r5 r2I** 2A5 3A6 **t5Ir x9** 1F9 3I9
o8H4Gc 4I4 **r4G o4D5Ir eIEc2 x6 a86 r7D** 5I7 3H7 2E7 1D6 3E5 1G5 2I6 4D7 5E2 6E9
5F6 6C6 4C2 5C9 5A8 5B4 5D5 6H2 4G9 9A4 7B6 8B7 7D2 8F5 7C5 8C8 8E6 9E8 9I2 8G4
9H5 9G6 7G7 7H8 8H9

285: 2A4 5C1 5D3 8D1 9H1 8H4 5G4 **a25 b3r6 cAc** 6A2 **dBc q72r3 r8A** 7E2 **c7r dFc**
5F2 4G2 **bIc5 bIc7 g1r** 1F5 **q85r8 v1568r8 b7r8 t1Hr x5** 7B8 **c3r** 2G5 **e72r3 p348r5**
x6 4D9 6I9 7F9 7D4 6F4 4F7 6H7 7I7 9G3 2I3 1A3 1C9 3C7 2C8 1D8 2F6 1I1 2B1 1B2 2H2
1H6 1G7 3G8 7C3 8A5 3B5 3A6 6C5 4B6 5E5 6D6 6E8 4I5 5I6 5H8 9C6 9A9 8E6 9F8 7H5
8I8

286: 2H9 2I3 5F2 4D3 6F8 5H3 4I7 4G1 6G4 5A4 5B8 **a16 a31 a49 a56 a92 dCc** 3C8
1G8 **a12** 2D4 **o2F9Ec** 4E4 **q28r1 fBc b8r6 r1E** 1I1 **u726r7 c9r s88 x5** 7D8 9A8 8A9
9D9 **a77 e82r1 d7r pCDHc5** 1E7 2C7 2B2 3A1 1A6 2F1 6B7 4B9 6C5 6E9 3F9 3D6 1D2
3E5 3G2 1H5 4F5 5E6 5I5 6H6 8B1 8C2 9B5 7B6 7A7 9E1 8D5 8F6 9F7 7F4 9C4 7C3 7H1
9H2 9G3 7G5 9I6

287: 2A1 2F5 6I1 4C1 6G2 3I2 8B2 4A2 8E1 8H5 7C5 5B5 6E5 7I7 2I9 3D7 1C7 **a68**
d8r i46 q41r3 q38r3 a93 a73 o4B3Cc p149r3 uECGc4 x4 r5C 5I8 8I3 5H7 4F7 9E7
a98 c3r t1Ar t3Fr x4 r9F 1F2 7E2 **a89 r2D** 8D6 8F4 **r5E a19 c1r r3C** 6C8 4B4 3C4
1A3 3B8 1B9 2D8 1E4 3E9 3F6 3G3 2H4 1H8 5C3 5A9 6A6 6D4 6F3 5E6 4H3 5G4 9B3
9A8 8C9 7D3 7F8 9F9 8G8 7G9

288: 6I4 7E1 6F1 4B1 1A1 1C3 2H1 8H9 4D3 4E6 1H5 a65 a77 b1r9 cHc f5r a49 uEBIc5 uDBIc6 uGBFc6 u816r8 uFCGc8 x6 3F6 1I6 8B6 b1r8 bIc8 cFc dEc a55 4G5 bIc5 7C5 6B5 6C9 p567r2 qDCc2 e92r2 o2I3Cr t8Ar x4 8E5 9I5 7G2 4H2 2I2 3C2 2C8 3G8 2G9 3B9 2B4 3E4 3H7 6A2 5A4 5B3 4C7 5E2 5D9 1E9 1D8 5F5 2D5 2F7 6D7 6E8 5G7 9B2 8C4 8A7 7A3 9E7 9H3 8F3 9F8 7H4 9D4 7D6 9G6 8I8

289: 1G9 5I4 4I5 9H2 3G2 2A2 1F2 4E2 5C2 8H6 a67 a91 a93 bIc1 bIc3 d8b 7E9 a87 fDc 9F6 h13 q76r5 r2E bIc4 t3Fr t3Dr c3r a11 x7 2B1 3F1 1I1 7H1 7I3 3H3 u418r7 uAEIc7 v1478r7 r3C 7C7 s28 5B3 5G1 4C1 6C9 5H9 6H7 9A1 5A7 1B7 3C4 3A8 1D4 2E7 3I7 2I6 3D6 6B8 6A5 4B6 6G6 4G3 9B4 7B5 9C8 8C3 9E3 6F3 2D3 2F9 6E4 4D9 4F7 8F4 9D5 5F5 5D8 8D7 7F8

290: 2C3 1G2 2H8 3I9 2I7 2G6 3H5 6H1 a14 a62 a66 d7r a71 u625r5 x5 x5 9G5 8G9 7I4 4G4 a44 i15 bIc3 c8b q83r7 cEc 4E3 3D3 cDc e83r7 p256r5 t6Fr 5C4 6C6 4I6 5I2 4F2 6I5 c7r r5A dBc 1A6 o7C4Ac r7C 1C7 1B9 2A5 3A4 2F4 1E5 1F1 3E7 4B5 4D1 5A1 6D4 5F5 6F7 9C1 8A7 7C8 4A8 4C9 9A9 7E1 8E4 9B4 7B2 8B6 7D5 9D7 8F8 9F3 7F9 9H2 8H3 7H6

291: 3C6 3H4 6D6 2I7 1I1 4A1 7A5 a87 bIc2 c4r 4C9 u834r8 x3 r1H 3I9 7I2 a99 6H7 bIc3 c6b t3Gr t9Er f9r 9C2 u619r5 x3 3F3 cGc dEc p267r8 o4B7Cc 2C1 r1C fBc 5A6 x5 eGDc5 8F2 8E7 bIc5 l23 2G2 1H3 2A3 2B4 1C5 5C4 5B5 4B7 6C8 6F5 5D7 5F1 4D8 2E8 3D5 2H5 3G8 6E9 6G1 5H2 4E2 5E3 4G3 5G9 8C3 9A4 7C7 8B8 9B6 7B1 9D1 8D4 9E5 7F9 9I3 8G5 8I6 7H8 9H9

292: 3E9 1I7 2D7 6C8 6A7 6F9 7C6 8A9 7G9 2E3 8B3 a16 a32 2C2 a41 a68 a98 b7r5 cBc dAc r7E 3C1 uDAIc1 o8D6EC 4F2 6B2 4B6 6D6 9E2 a53 p169r1 8F7 9C7 s48 8G8 t9Hr x4 1C4 2B5 2G4 5B4 5A5 4A1 9A4 8C5 i36 9H5 cGc o9F5Dc q48r4 7E4 4D4 5F8 5D3 6E1 1F1 3D5 1E8 1G5 3G6 1A6 3A3 1H3 3H8 3I2 5I1 6G3 6H4 4I8 8D1 9F3 7F5 7D8 9G1 8H2 7I3 8I4

293: 3A9 2I2 7A1 3F7 7D7 9D2 8H7 4I7 7B9 8B2 7H2 9I9 a31 a34 a85 b7r4 b7r8 8E3 8F5 9G5 d5r 4D5 f1r fGc o5G1Hc q83r8 u235r6 x3 x4 t5Ar x8 5B5 1A5 1B7 6A7 4A2 6G2 4G9 6E9 v4679r4 2B3 1D3 3I3 4C3 6F3 a54 a56 e83r8 i48 5G1 1H1 6H6 5D6 5I4 1G4 3G6 2C6 2A4 3C8 1E6 1I8 6B4 5A8 4H8 6D8 2F8 2D1 8C4 9B8 9F6 9E1 4F1 4E4 7F4 7E8 9H4 8G8

294: 6A9 6C7 4C4 5C2 4H5 7C1 a62 6D6 6E1 5I1 3H1 1H7 3B7 1B9 9F1 a14 a15 bIc3 cIc o2H1AR q39r4 t3Er uFEIc9 a59 x4 x8 6G2 8H2 9H3 c7b e93r4 p179r8 r1A 2G9 4I9 5F9 5G3 3I3 2D5 3C5 r7G 7B4 8B5 cFc 1E2 d8r h23 7F2 4D2 4F3 8D3 7A3 8A7 7E7 9E5 8F6 3E6 3D9 1F4 2A4 2C6 1A8 3G4 1G6 2H8 6I8 6H4 9A6 8C8 9D4 7D8 8E9 8I4 7G5 9G8

295: 6A1 4C2 8I1 7F1 9I3 1I8 a44 bIc6 d3r fBc a78 c7r h56 o7H9Dr q62r9 3C9 1C1 3D1 8A9 9A8 7G9 8G8 7E8 6D8 4B8 6B9 4F9 2D9 7C3 uIAFc4 u134r7 x4 x7 6H7 a64 o6E2FC 2B7 1A3 2E3 5B3 8F3 qFCc2 2I5 a65 cHc eIEc2 r4G 3G7 s38 8D2 9G2 6I2 2H2 3E2 1G4 2F4 3I6 5F2 6E4 4I4 5A4 4A7 5D7 1E7 1D6 4E5 5G5 4G6 9D5 8E6 7B6 8B5 9F7 8C7 9C4 8H4 7H5 9H6

296: 1A1 2A6 3B9 3E1 2F4 1H3 3G6 6I1 7G1 9C1 8F1 7I3 4G3 6B3 9F3 a22 a68 a78 b6r5 b6r9 4F2 1D2 5C2 2B2 7E2 5F6 7D6 x5 o9B7Hr o7F9Hr q49r4 t8Dr uHDGc7 a97 c8r q85r9 4C9 c6b pDEHc5 r6F 6E5 8E8 cDc e94r4 s78 9D5 1F5 2C5 1B8 3D8 3H5 2I8 2G7 6F8 6D9 4I7 5D7 4E4 5A4 4B5 5G5 5H8 5I9 9B4 7B7 7C8 8D4 9E7 7F9 8A9 7A5 7H4 8I5 8H7 9H9

297: 3H5 6G1 5B1 3C1 6B3 9B9 7G9 3I9 2F9 2D8 8F8 2B5 a48 a87 d1b d4b 7A5 8D5 7E4 a83 b7r2 b7r6 dDc dEc h26 6D2 5F6 7F2 7D6 r5E r6F 1E1 9D1 uGDHc3 c1r

uBCFc4 3A2 8B2 u916r6 q28r6 eGCc6 x3 r4D o5I4Dr cIc p248r7 x4 1B4 3B8 3F4 1D3 3G3 1G8 1H2 6C4 4C5 5A7 2C7 1A6 2G6 1I7 5E3 4D4 6E5 6F7 4E8 6A8 4A9 4H3 5I4 4G7 6H9 6I6 9A4 8C6 9F3 9E7 9G2 8I3 8G4 9H6 8H7

298: 1A7 2G5 6C7 4D6 8B6 9H7 7G6 3D7 8E7 3E1 1I1 1H6 2H4 1F4 5I4 6I6 4I5 6H9 4B9 8G1 9G4 7E4 8C4 1B2 **q75r5 e96r5 t5Br u934r3 v2349r3 o8A4CC a48 q68r3 w5D8 x8 c6r r9B x2 cIc 8F8 a83 cFc c7r d5r r8A 5A5 4C2 6A3 5B1 2C1 2B3 6B8 6F1 5D2 2F2 2D9 5F3 6E5 4E8 4G3 3I3 3G8 5H8 7A1 8A2 9C3 9B5 7C8 9E2 7D5 8D3 7F9 7I2 7H3 9I8 8I9**

299: 2E8 1G8 5C9 5F5 5D8 7A3 1B3 8A5 9A8 8F2 7C2 3A2 5B2 8H8 9C1 **a17 a53 a76 cDc 6D3 d4r b4r7 uFGHc9 8D9 8E1 3D1 9H9 4G9 4H5 7I5 2G5 2H2 6G2 uHEGc4 uHEGc7 q75r7 pEGHc7 x4 a44 r8C v1289r4 r6F 4D4 7D6 b4r6 r3E 3G7 5G4 6A4 5A1 6I1 5H7 6F7 5E6 5I3 3H3 2F3 1I4 2C4 3E4 3I9 1F9 3F6 2I6 6H6 9F4 8B4 8C6 1A6 1C7 4B6 4A7 9B7 7E7 7H4 8I7**

300: 3H5 4G6 8B5 9A9 9B6 8F6 3E6 2A6 9H1 8G8 6E7 4B7 5E3 1E5 9E8 **a63 c5r c6b dAc h58 5F5 4A5 5A8 4D8 1F8 q61r1 q72r7 r6G x2 4F2 6D1 4C1 1B1 pABGc2 b7r2 v1589r4 c3b cIc c9b d3r e83r7 r2D e91r4 r1C 3F1 2G1 r3I 8I3 4H3 4I9 2H9 3I7 2F7 1D4 3D9 1C9 3A2 2B4 3C3 2D3 1I2 3G4 5H4 6A4 6B3 5C2 6G2 7B2 7A3 8C4 7F4 8D7 9D2 8H2 9I4 7H7**

301: 3A8 1A6 4F4 5H6 2C1 1C3 **a32 a37 a43 a45 a57 a61 d3r d4b a49 fFc 8E5 3H5 4I5 4G3 h36 8F6 3D6 3F3 9D3 q49r8 eHCc8 r2A a52 o5I9HC 9E1 r5I cHc c8r r7B 7H7 8A7 8H1 7B1 r9H 6I7 1G7 p149r2 uEBIc4 x4 1B4 2E4 2D7 2F2 1F5 1D1 3E9 3G4 1H9 1I2 5E7 5D2 7E2 9C2 6A2 6B9 2A9 2B5 5A5 5B3 4C8 4H2 5I8 6F8 5F1 6G1 5G9 7A3 8B8 8D4 8G2 8I3 7I4 9H8 9I9**

302: 2B6 1F3 1G1 5E5 4I9 6H3 4A3 9I3 8B3 7I6 3H9 2H8 5I2 4F2 4E6 8F6 8A2 7H2 **a11 c2r h47 q48r8 u148r8 x4 4G4 5H7 q48r7 r5A uFAIc7 v1468r7 fBc p148r8 r1C 1B7 1C2 3F7 1E8 2I7 3I4 2A4 6B2 7G7 9G8 9A7 9H5 8H4 3A5 3B8 3C1 5B1 6C4 4C7 5A8 5F4 4D8 8C8 7C5 9E4 7B4 9B9 9F1 8D5 8E7 6D7 6E1 2D1 2E9 7F8 7D9**

303: 6D5 4F7 5D8 4D1 9I5 7A5 2B5 1F5 **a46 a53 a54 a94 a98 gGc d4r u628r1 x3 3F4 2C4 7H4 2F8 1I8 1D3 c7r h13 r3G 4G9 h34 cBc eGBc7 o4B5Ir q83r9 r5I 6G7 1H7 3B7 6B9 3G3 5H1 2I1 b1r6 e83r9 s38 9D4 8D9 1E9 3A9 1A2 1C6 6A6 6C1 9C9 9A7 5C7 4B3 5A4 6E3 4E4 5I3 6I4 8A1 7C3 8B4 9B8 9F3 7F1 7E8 9E2 9G1 7G2 3I2 2D2 3D6 2G6 4H2 4I6 9H6 8G8**

304: 1B8 3D4 2A4 2F9 4D3 6E4 4I9 8D9 7B9 1H3 **a65 u159r1 3H1 3I7 d7r u369r5 2I5 5G5 5H4 6H7 a15 cGc 9G1 cBc cBc h47 7C4 8B7 5C7 8A1 5B1 4E1 1F1 9B5 3A5 8G4 7G7 3B3 a46 a56 bIc6 s88 t6Dr x2 r7E r7I b8r2 9I3 8C3 eDCc8 6F5 8E5 1D5 5D6 pAEGc2 q58r8 7A8 6C8 6B6 3C6 2B2 1E6 3F2 1G2 2H6 4A2 6D2 5F8 5I2 4G6 4H8 9C2 7E2 8F6 9D8 8H2 7I6 8I8**

305: 4F6 5I6 7E6 4D3 8E3 **a45 b7r5 cIc 3H8 a39 c3r u834r7 9G7 7G2 6G1 8H1 a72 bIc5 cFc cGc g2r h29 cEc a58 q72r1 e91r1 r8D 8I8 9I9 8D9 5E9 3F9 3E2 5D2 6D8 6H9 9F2 6B3 6C5 8A5 u247r4 uADGc4 flr u159r8 c1b p247r4 dBc x8 1B8 1C2 2C9 3C6 3A7 2A3 2D6 1E5 2F8 1D1 2B1 1A4 3D4 3G3 2I4 2G5 1G9 4C4 5B7 5A8 5H3 5G4 4H7 4I5 9A1 8B2 7B4 8C7 7C8 7F1 9D5 9E8 7I3 7H5**

306: 1A1 2B5 6B1 4H1 5F1 6I9 9D1 8F5 9E9 7C9 3A9 1G9 1H5 4G5 6E5 7B7 **a67 a82 o8B9Gr d9b a96 b1r6 p269r2 q82r8 t7Fr x3 3G7 5I7 a17 t2Gr v2459r3 3C6 2H6 e82r8 c7r r6D 4E6 1E2 2G2 3B2 3H8 2D8 1I3 3F3 3E4 4D3 5A3 2C3 2A7 6A8 6C2 4C7 4A4 5E8 6H3 5G4 9A2 8B3 9C4 8A6 7F8 8D4 6F4 6D7 1F7 1D6 7D2 9F6 8I2 9G3 7H4 7I6 8G8**

307: 3D7 7C2 5A2 9F1 8D3 2A8 8A7 9H7 6G7 9E4 **a25** 6F3 **a63** **a68** **a88** **c9b** 8G4 **eIAc9** **o3A1Gr** 2G2 3C4 **c5r** **fBc** **a43** **uHDGc5** **u358r6** **v5689r5** **c2r** **cIc** **e72r1** **p358r6** 1E2 4F2 7E8 **x5** **r6B** 7D5 6E5 5C5 4C3 4E9 5E7 4B7 5B4 4D4 5F6 1D6 2B6 1C1 2I1 3H6 5I3 4H5 3G5 2F5 1F4 3F8 1G3 3A3 1B9 2H4 1H8 3I9 6C9 6B8 4I8 7B1 9B3 8B5 8C8 9A9 8E6 8H1 9I5 7I6 7G9

308: 3F4 2I2 4A2 5I8 5C4 7B4 8B2 8C5 6B5 9F2 7H2 7I1 4H1 8G8 3B1 2B8 3E8 9D8 1B7 **a25** **a27** **a69** **c9r** 9H5 3I5 **x7** 3G7 8H7 3C9 **a87** **u639r6** **uDCGc6** **x6** **cDc** 4C7 **q81r3** **v1478r3** **q36r3** 5A1 6F1 **a43** **cFc** **p369r6** **e72r6** **r1I** 8I6 6H6 2G6 3A6 2C3 1I9 2F9 2D7 3H3 6A3 6C8 4D6 1F6 1E3 1D5 5D3 4E5 5F7 6E9 5H9 7C6 7A8 9A7 8F3 9E6 7E7 7G3 4I3 4G4 9I4 9G9

309: 4C5 3A5 5G4 9I5 9G7 9C8 2D5 **a91** **b4r7** **c3r** **cEc** 6E5 8F5 **e73r3** **f7r** **cFc** **d8b** **a89** **b7r9** **q52r8** **s68** 2E4 3F3 8E3 7C3 9A4 7F4 9E9 1A6 **dBc** 8B9 **a17** **t1Ir** **t2Gr** **uGCEc2** 8H8 **a38** 2F1 1B1 2B3 3G1 1I3 9D1 3D9 **s68** **x6** **r4D** **pCEGc2** **r4G** 1C9 3C4 2C7 1H4 3H7 4I7 4D6 5F8 1D8 1F2 6F7 5B7 4G8 2I8 2G9 6H2 5C2 6B6 4E2 5E1 4H1 5I6 6I9 9B2 8C6 7D2 9F6 7I1 8G2 7G6 7H9

310: 3A8 3D4 3H2 9F9 6D9 5G9 9I8 7D6 9G6 7E2 6F2 2D2 **cAc** 9A4 8E4 **d4r** **c4b** 4A9 2B9 4B4 6I4 **d8r** **cCc** **f6r** **eGDc1** **bIc1** **r8F** 4F1 **a58** **h68** **o5A6Hr** **r2F** **s38** **dIc** **p126r7** **u614r6** 5B2 9C2 **x5** **o2E1Gr** **a33** **r2C** 2F3 1B3 2C6 3B5 2A7 1E7 1F5 1D8 2E1 1G1 2I5 1H6 3I7 3G3 6B6 5A1 6C5 4C7 6A3 5C8 4E6 6E8 6H1 4I3 5H5 5I6 6G7 4H8 9B1 8C3 7A5 8B7 8D1 9E5 8F8 7I1 8G5

311: 1H1 4D9 8F1 7I4 8D4 3F4 2C4 6B4 7D8 1A9 5C9 5B1 7C6 9C1 7G1 3B8 2H8 **a36** **a66** **a97** **bIc5** **c2r** **e74r5** **f3r** **t4Hr** **t8Gr** **x2** **x3** 5A8 6F8 8C8 **bIc2** **eFBc7** **cIc** **b3r2** **h57** 2E5 3I5 2I7 **bIc7** **cDc** **qBHc2** 9G9 3H9 3G6 6H6 **r4F** 4C2 **bIc2** **cHc** **uFDIc3** **a53** **v2368r3** **x3** **r6A** 1I2 2A2 2G3 6G2 5E2 3D2 1F7 3C7 1B3 3E3 1D6 4B7 6A5 6C3 5F6 4F3 6D7 5I3 4H5 9B2 8A3 7B5 9D3 9E6 8E7 8H2 7H3 8G5 9H7

312: 5C8 5D7 6G5 7A8 7D3 8G8 8I9 5I3 1A7 2H7 1H8 2F8 1F3 2C3 4A3 **a91** **eFAc1** **qEBc2** **q49r6** **uCEGc9** **uDBGc9** 4E9 6B9 4F5 **cCc** 7C5 1B5 3D5 8E5 3C9 1C2 8C1 **x2** **a32** **c9r** **s88** 5G2 **x4** **b8r4** **o3F5Ec** **t7Hr** **uGBEc4** **a94** **c7r** **pDFHc4** **x6** 3A6 2B1 2D6 2E2 1D9 1I6 1G1 3F1 1E4 3H4 3I2 2G9 6A1 4C6 5B4 5E1 4I4 6H6 9C4 8B6 7B7 9F2 6D2 6F4 8D4 7E6 8F7 7I1 7H2 7G4 9G6 9I7

313: 1G3 3I7 4H3 8I4 8H8 8G1 5I1 3H1 4D1 7H9 **a38** **bIc8** **d6r** 6D8 **a43** 8D3 9A3 5C3 4C8 5G8 9B8 **a79** **d5b** **fAc** **p169r9** **o3E1Br** **r3D** **r9I** **u736r6** **q28r6** **eFBc6** **dAc** **h46** **cCc** **t7Br** **x2** 3C2 1B5 3A4 2B6 1E4 2E1 1A1 2A8 2F3 3E5 3D6 1F9 2I2 1I8 3G9 6C4 6A6 6E3 5D9 6F5 4G5 5A5 6I9 7B4 8C5 7C6 7D5 8F6 8E7 5F7 4B7 4A9 5B2 4E2 8A2 8B9 9F2 9E9 7G2 9I5

314: 2B3 8C5 9B6 6B1 **a19** **a35** **dIc** **o7B9Er** **uDAIc3** **a53** **c8b** 7F7 **c5r** **cHc** **cHc** **j59** **v2578r9** **c4r** **a65** 3E5 **a22** **c3r** 3C6 **e53r7** **t5Gr** **a62** **cCc** **g4b** **u823r1** 9I8 2H8 5H2 **a91** **r5C** **r5G** **o4A5GR** **c4r** 6G9 **x4** 3F4 2F1 2D9 3D2 1E7 1G1 3A1 2I2 1H6 1I5 3G7 4B4 5B5 4C9 1A9 1C4 6C2 4E2 6E4 4F5 5D7 5F9 6H5 4G6 6D6 4D3 6I3 5C3 4A8 6A7 4I7 5G8 9C1 8A3 9A4 7C8 7B9 7E3 8D4 8E8 9E9 8I1 8G2 7H4 8H9

315: 4D5 6H8 7E8 1D8 8C8 9I3 9H6 8F9 7F4 9F5 9D1 7B1 7C5 **a27** **b4r7** **dFc** **p268r1** **q43r3** **dBc** **r2F** 6C7 5D7 **eDBc4** **c6r** **t4Ar** **f5r** **r1E** 6B9 9A9 9B2 6D4 2B4 2D9 **r2C** 1E4 **o2H1Ar** **t5Cr** **e52r3** 3C6 1F6 3F7 1B5 3I5 **c5r** **uIAGc2** **x2** 1I7 **t4Ir** 3G4 3H9 8H4 8I1 5G1 2H1 3E1 1A1 2C2 3B3 3A8 2F3 1G2 4A2 5C3 5A4 5B8 4B6 6F1 5F2 4E3 5E9 6I2 4I4 5I6 4G9 4H7 7H2 7G7

316: 3B4 5A5 6D4 5F7 4H3 9C6 7E5 8C5 7B7 7H4 9I8 9F3 **a56** **a71** **a79** **a82** **dDc** **q95r9** **o6B4Fr** **q42r9** **a19** **uHADc9** **x1** **x9** 2B9 1B5 4C9 6B6 4F6 **x9** 3F9 2F5 3I5 6I9 5H2

a61 t2Ir qFAc2 eFCc2 c1r d3b h36 cAc p239r1 r1C 1F1 3E2 2I2 1C2 3C7 2C1 2A8 3H1 3G3 1A3 3A6 2D3 1D6 2H6 1I7 4A2 6C8 5D1 6F2 5E9 4E8 6G1 5G8 9E1 8G2 7D2 8D9 7A9 8A1 7I1 8I3 8H7 9H9

317: 1I1 1H3 8A9 4I7 **a34 a71** 4C1 4E4 3C4 6A4 3A3 2A1 **o1G3BR u537r2 a42 d6b cGc** 2G4 **x2** 3B2 1B5 1C8 2F2 1G2 2H5 3D5 3E1 5A2 6I2 6G5 8I5 9I3 **fDc** 8F3 6D3 4B3 **b4r8 q25r7 s47** 7D8 6E8 5B8 **e52r7 e71r7** 8E6 **a26 pBFGc6** 6C9 **r7H** 7E7 2D7 1A7 2C6 1D6 1E9 6B6 5C7 4F6 6F7 5D9 5H6 4H9 4G8 7A6 9E2 9F9 7H2 9G6 8G7 9B7 8B1 9D1 8D4 9H4 8H8

318: 3H5 9I1 9H2 1D7 2I7 1I6 6H6 5D6 6G7 4G1 6I8 3G8 2E8 7D8 7F2 8H8 9C8 2A6 **a64 c4r gBc h24 q26r1 e53r1 u514r2 x3 x3 o6B5Ir r6C** 1A5 **d7b** 8G4 **h56** 8C6 4B6 4C5 9B5 8B7 8F5 9E7 **e83r9 s78 cEc e63r2 t3Er** 6D3 4E2 3D2 1C2 6B2 6F4 1E4 5E1 2F1 3B1 2C3 6C1 5B3 5C4 6A9 5I2 4I4 9A3 7B4 7C9 8E3 1F3 3E9 3I3 1G9 9F9 7G3 8I9

319: 2C1 1D9 6F1 4I9 6C9 5C4 6E4 9B9 7B1 9F3 9H1 8I5 5G5 **a42 a63 c2r dIc d1b a17 bIc8 qHEc2 a62 x6** 2I6 2D7 **u358r6 v1367r7 cHc pBFHc6 q84r7 a57 r5B r8F e76r6** 9G8 1H8 1E6 3B6 1A3 4B3 5B8 6A7 4A2 6D2 5F6 6G6 6H3 5I7 5H2 9A6 9C5 2A5 3C8 1C7 1F5 3F4 3E2 2F8 1G4 3G7 3I3 4E8 4F7 7C2 8B7 7A8 8F2 7D6 9E7 9I2 7G3 7I4 8H6 7H7

320: 2G5 5F3 4C3 1A3 5H9 5G2 7I3 8H8 9F8 **a14 a89 dFc f7b** 7C5 **q41r5 a25 u528r1 u869r4 u158r7** 3H7 **f1r h57 uBFGc7 x2 x6 x7** 1F7 1E5 6F5 4B5 3A5 2A4 **bIc4 eGBc7 f7r fBc a48 o6B4IR cAc t1Cr qAIc2 a72 r7H** 2H6 1I2 7H2 7F4 9C2 8C4 9I4 4H4 6E4 3D4 6C8 6A9 5C6 1B6 2B8 3B2 1C9 1D8 3E9 5E8 4E7 4D6 5D1 6B1 5A7 4I1 6G7 6I6 8A1 9A6 7B7 9B9 7E1 2F1 2E2 8F2 8E6 7D9 7G6 8I7

321: 1E4 1F9 6A2 5C4 6D3 6H4 8I4 9H9 8A9 **e51r8** 8F8 **p158r5 c2r q37r3 a93 v1258r1** 6G7 4G2 **b6r1** 4F5 **r5G x7 r7H** 8G6 7G3 3I3 1B3 9C3 **dBc d7b** 7F7 **uEBFc6** 9D2 3E2 7I2 **a86 d2b r6E** 6B6 4B9 4C7 2A7 3D7 3F6 2D1 5D6 4E8 1D8 2E5 3H5 1A5 3C1 1G1 2H8 5B5 5A1 6E9 6F1 4I1 5G8 8B1 7C5 9B7 8D5 7H1 9E1 7E6 9A6 7A8 9I8

322: 5H1 6B1 8B2 7D1 7C4 5A4 5C7 3H4 3A1 2F1 2A5 **a48 a96 d2r o2E8Fc** 8D4 6F4 4G4 **o7I5GC q68r3 v2689r3 x8 r1D** 4D2 3E2 4B8 **a29 c6b u814r5 p569r5 u157r8** 3G8 3C9 1C6 1B3 4C3 5B5 6E5 5F3 2D3 1D9 1F8 2E7 3F6 3I3 2I6 1I7 1H5 5E8 6G3 4I5 8C5 9B9 8F7 9A7 8A8 9D8 9G5 8G6 9E6 8E3 7E9 9H3 7H8 7I2 5G2 2H2 2G9 5I9 8H9

323: 3A2 3D6 3G7 4C2 6G9 7E2 8B2 7I6 8C9 8D7 **a11 a23 a47 a85** 5G5 6C5 4E5 4F7 2E7 9D5 **b4r8 d9r dBc** 6A6 **x4** 6B8 3E8 **f2r** 1H6 **uHAFc3 o3H5IC e75r4 dFc v2578r1** 6D3 **p159r3** 3I9 **r3H** 4I8 2H8 2I5 8H5 **x1** 2A1 1B3 2B9 2C6 3F1 2F3 1E9 1G1 3H3 1I4 5D1 5F8 6E4 6H1 5I3 4A3 5B4 5C7 4H4 7C1 9C3 8A4 9B6 7B7 9E1 7F4 7D8 9F9 8I1 9G4

324: 3F5 3D4 3E7 2H7 6D1 6E2 4G4 9F8 1E8 7F4 9C4 9I7 3G8 7I1 9A1 6I6 3I9 **a75 cFc c3b f4r q28r9 q74r9 uBFHc9 x2** 1D2 **eDCc9 eEAc9 q16r3** 4B6 5F6 4F7 5A7 **x2** 3A2 2G2 3H3 **pAEGc3 o8D7AR r5C d7r s57** 2C3 1B9 1F3 2D9 4A9 6B3 5B5 5C2 4C1 6C8 4E3 6F9 6H5 4H8 5H9 5G1 1H1 1G6 9B2 8A3 7A6 8C9 7C5 9D3 8D6 7E9 7H2 7G3 8G5 9H6

325: 2H8 3E8 2I2 5C8 9C1 8B8 8A9 9H6 **a24 bIc9 c3r** 3G1 2A1 1E1 2E4 4H1 9E9 **bIc4 cDc h35 u734r2** 8F2 5H2 **x5** 2C5 **x7 r7E o9I8Cr x7** 8H7 8C4 1B4 9I4 **p358r5 v2389r3 c6r** 4A4 **c4r r7I** 4E2 **uBAEc7 x3** 2B3 1C6 3D3 3F5 2F6 1F9 2G9 6E5 5F7 5G5 6G4 5D4 4D9 6D6 4G6 4I7 6H3 1I3 1H5 4C3 5I9 7A3 7B6 7C2 3A2 3C7 6B2 6A7 9B7 9F3 8D5 7E7 8G3 7I5

326: 2C1 1D1 2D6 3D2 3I8 2B8 1I4 1G6 1H9 6B4 4D8 4E4 3F4 5I6 8A6 7A8 9E1 9D4 8F8 6G2 2H2 **a23 a89 s58 q19r5 x5 u467r5 a65 cHc s58 a57 r7D p179r7** 6I9 **a59 bIc7 o6C3Ac eFBc5 cCc r7B eEAc5 r8C eICc3 x7** 1B7 3A5 1F5 6C5 5E5 6D7 5D9 9B5 9A2

5B2 4C3 4A9 5A7 5H3 2G3 3E3 2E7 3H7 4G7 4H5 4I1 7B3 8C7 9C9 8D3 7D5 9F7 8E9 7H1
9I3 8G5 7I7

327: 3B3 9B1 c6r 6B5 4G5 3I5 2G1 1E1 4D1 5H1 c9r dCc f7r h34 f8r q93r7 r6C x9
u269r9 a29 pCDFc9 o6D8Ec r6C x6 q92r6 dFc eFCc6 x2 r5I 1I4 3E4 6G4 8F4 7C4
8C3 7E3 6F3 5E2 1F2 6D9 2F9 3D6 2D7 3A7 2B2 2E5 3G2 1H6 2C6 2H8 5B9 1A9 1B8 4A6
6C8 4E8 4H3 5I6 9C9 8D5 9A5 9F6 9E7 7D8 8A8 7A2 8E9 8H2 6I2 6H7 7I7 8B7 7B6 8G6
7G9

328: 3H5 4C5 4D6 7B5 8A3 8C6 8E5 7E1 7F2 6E2 7D3 7H4 7G6 8I2 8F7 q61r6 a16
t2Cr uEAIc4 9D4 q92r8 eIFc8 s88 3I3 x9 4I4 4A7 9A2 a54 f3r f5r o1E3Gr q43r9 1E7
3G7 5H7 5G1 8H1 p348r9 r5A bIc9 r1H 6H6 2I6 1H8 3A8 2C4 2B7 1B9 1A6 3E4 2F8
2E3 3D9 2H9 5A4 5B6 5C2 3B2 3C1 6B3 6C9 5F3 6F4 4E9 4G3 6G8 5I9 9B1 9C7 8D8 9F9
9I8 8G9

329: 3A1 1H9 4E7 6G5 6I8 1G8 9I7 1C7 a56 a59 a61 c3r d5r fAc h68 dCc 4C9
q57r5 uIAFc2 bIc2 u257r5 x5 o9A4Bc e41r5 9D5 9B9 o4B6Hr r5B 5H2 4H1 q57r1
a71 cBc x3 x3 t8Gr a94 cGc h23 r1E 1A5 2C3 2E5 1E4 3G3 1F3 3D6 2D7 3E2 2G2
2H4 1I6 3H7 5B5 6C1 5E1 4F5 6F6 6D2 4A2 6E9 4I4 6A4 4B3 6H3 7B1 9A3 8B4 7C5 8F2
9F1 8D9 8G1 7I2 8I3 7E3 8E8 7A8 5C8 5A6 8C6 9G4 7H6

330: 2A9 1D9 6I5 3D1 9A7 4B7 6C1 4G1 2H1 4I9 5H4 7B1 8C3 7A5 a46 d5r d7r fEc
8F5 1B5 r3A x2 x3 r3E o1C2Gr p359r2 r7D t7Fr 9F3 d2b a26 u379r6 v3579r6 2I4
3C4 x8 2C8 1C7 2B2 3A6 3E8 1F2 2F6 3I2 2G7 5C6 5A8 4A3 6E3 2D3 2E5 5D5 5E2 4F8
4D4 5G3 1H3 1G6 6H6 6G8 7C2 8B6 9D2 7F4 7D6 8G2 9I6 7H8 8H7 7E7 8E9 7G9

331: 3A1 2C2 2B6 3D4 2F5 3E8 3H6 5C6 8C8 2G4 8H4 1C7 a19 f5r 4F1 o5B6Ir a65
4B4 1A4 1B9 q59r1 q37r9 uIAEc9 5H9 u735r7 x3 cFc eGFc9 s88 dIc e95r1 p357r7
r4D r6I 8A5 6B5 5B8 6C1 4D8 4E6 5F2 4A2 6A7 5A3 6E3 5D7 5G1 4H7 4G5 6I8 1G8 1H3
1I5 9B1 7C3 9A9 8F3 9D6 7D5 7I1 9G3 8G2 9E2 7F7 2E7 3F9 3G7 2I9 8E9 9H5 8I6 9I7
7G9

332: 1F4 3G1 6D3 4B1 8C1 9D1 5E1 bIc6 b3r6 f6b a62 a32 8E2 7B2 t8Gr 9G2 1I2
1B3 uCAHc4 q75r4 6G4 7H4 8B4 2A4 5C4 9I3 2H3 7F3 a75 a99 uBAHc5 u358r7 x5
8F5 8D7 eFBc7 cCc s78 t2Dr o2E1GR b1r9 x9 7C9 9A6 3C6 9B5 7D6 9F9 t3Ar d3r
a18 e43r9 r5H 5D9 1E9 2E6 3F7 1C7 3A5 2B9 3B8 3D2 2D8 1D5 2I5 1G6 2G7 3H9 6C5
5B7 4A9 5A8 6E7 5H5 4H2 5F2 4F6 5I6 4G8 6I9 8I8 8G9

333: 1C6 1A8 3I4 6I1 8C3 7B6 9H1 7E1 6D6 7A4 7G9 7I5 1F4 1D2 4E2 9G6 5I6 a32
c2b q34r3 a63 o4D8Fc o5G4Fr cFc q86r9 eFBc9 d6r s88 a65 c4r a68 uBFGc5 r2A
uCFGc7 x7 3G3 4I3 3D1 2B1 pBFGc5 r2A 9A2 9C5 8B9 5C9 5B2 3C2 2A7 3B5 1E5 3F7
2H5 2I2 1H7 6A5 5A3 6C7 6B8 6E3 2D3 2E9 4F5 5E7 5D4 4D8 6F9 5G5 4G7 5H8 4H9 9E4
8F8 9D9 8H2 8I7 9I8

334: 3A5 2A4 5G3 6H4 9D8 6B8 a11 a39 a55 a59 a65 c9r 8H1 a61 d2r 3G7 9H7 9G2
bIc7 fEc fFc 2F7 q17r4 8G5 7E5 8E7 7B7 r3I 3B1 dEc r3E u439r3 a43 cAc dDc a82
x2 r9A o7A8Fr 6F3 e83r4 pAEIc6 o8C9ER r5B 8B2 2C2 1B6 3E2 3D3 1F4 2D6 1H2
3I4 2H9 1E9 2E1 1G1 2G8 6A2 5C6 4C7 4A3 5A1 5B9 6E6 5D7 4D2 4F9 5F5 4I1 5I2 4H5
5H8 8C3 7A6 9A9 7F2 9E3 8D4 8F6 7G4 9I6 7I8 8I9

335: 5D5 5G7 4A7 8B2 1I4 9F8 7F5 8A5 8F7 a46 a63 dEc a24 gHc d3b u429r2 cHc
x2 2E2 3I2 2G1 6F2 4H2 4I1 6G9 9H1 8D1 9G2 4E8 3F6 b9r4 u914r9 c8r 8G4 7E4 q81r6
a36 s78 t2Cr u758r9 p149r9 o5A9CC 3A8 r2A 9A4 6B4 4B6 5A9 6D6 5E3 4D9 6H3
5H4 9C9 1B9 2B5 2A3 2C6 3C4 3B1 1C7 2D4 3D7 1D8 1H5 1G6 2H8 7C1 7B3 7A6 8C8
9D3 8E9 8I3 8H6 7G8 7I9

336: 2B3 3A4 7C6 9A7 1H7 1G3 1E2 1A5 5B5 4B7 3C2 8E6 2D5 2F6 a64 b4r1 c3r eECc9 q36r8 t5Cr 5A1 cBc r6B s88 uHCDc3 uICDc3 a93 4C3 c5r uICEc8 x8 pCEIc8 8D8 i12 5G4 5I6 3G6 3I5 g7r 2G2 a38 r9E 9G5 7F5 9E9 6F9 5C9 6B8 2A8 3B9 3H8 2H9 4I8 5E8 5H2 4F2 4D4 4E1 6H3 6G1 9C8 7A9 8F4 7I2 8B2 7B1 9F1 3D1 3F7 5D7 5F3 7D3 8H1 9I3 7H4 7G8

337: 5D7 8C7 7G7 2H7 9G3 1H3 4C3 1C6 2I6 4B2 9C2 c9r o4H6Dr 5F2 5H4 d8b t3Ar x1 cAc 8A6 5B6 7D6 8D2 7I2 3G2 6H2 7A3 2B3 a99 e82r4 x4 x8 v2468r8 7F9 o1G6Ic p249r1 s58 cEc b1r1 e93r8 x9 1G1 6I1 4A1 3C1 5A9 6B5 2A5 1D5 3E9 1I9 6C4 5E1 6D9 4F8 5G5 6G8 3I8 1B8 3A4 2D8 2F1 1E4 2G4 4H9 7B4 9A8 9D1 8F4 9F5 7E8 9I4 8H8 8G9

338: 5F8 4B8 5G6 6G9 1H9 4G1 3H7 6I7 4D7 1F7 9G7 c2r cEc 6E3 c9r i23 9C6 9D1 6F1 c4b 6A4 fAc t7Fr u256r5 x2 x2 2F2 2D3 qDGc2 uDBIc2 9E2 7F4 1D4 3B4 3F6 1A6 3A3 5E4 8F3 8D6 7G3 1I3 9H4 eHAc2 s78 o1B6Cc cBc p256r5 q18r5 7B7 8E7 7E9 8A9 5B9 2C9 1B5 1C2 3C8 2B1 3I1 2I5 1G8 5A1 4A2 6C5 5D5 6D2 5I2 4H5 7C1 8B2 7A5 7H2 8G5 8I8

339: 5D2 8E4 8A6 4C6 6H6 6I5 8H5 a15 a82 c7r 7D5 9C5 7C7 c5r c9b dBc c9r f4r g2b a29 m3r a27 cHc o5A6Dr q63r4 a14 dAc e42r4 s48 t2Ir t4Er u279r2 x8 9A8 8B2 7E8 9E2 9D6 1E6 1D7 3D1 1I1 3G6 3I9 3H3 4E7 6D9 2E9 5A9 5I7 4G9 5H8 2G8 1F8 3F2 2D4 2I2 1A2 2A5 1H4 1G5 6B8 3C8 3A4 3B7 5C4 6A7 6F4 4D8 4I4 7H1 9B1 4A1 4B3 7A3 7G2 9I3 8I8

340: 3B9 6C5 2B5 2C7 3C4 2D4 3E5 4B7 4A9 5F4 7C3 8E9 9E2 9H4 4I2 a12 a16 a18 a21 a41 a87 c7r 7F7 9G7 7G5 9A5 7H9 6G9 7A2 1C2 uFBIc1 x1 5C1 4D1 7B1 7D8 a53 1G3 1E1 c5r s88 u248r8 t3Gr q26r6 a56 v2468r6 3H2 8G2 2G1 p248r8 s88 6F8 2E8 3D6 3F3 2H6 3G8 6E6 5E7 4E3 5H3 5G6 4C6 5A8 1B8 1A6 6H7 6I1 4H8 9B6 8C8 9D3 8F6 9F1 8H1 9I8

341: 2A1 5A4 4C2 1A2 6C3 4I7 7A7 3B7 3C8 2F7 9B8 9H2 1B5 5F2 4H4 a91 4D1 4F3 1G3 4G5 2I5 bIc8 cIc cEc j29 fDc t3Gr x4 x6 8H8 2G8 pADGc9 x6 u819r6 o8F9CR v2567r6 r1I 1C9 3A6 9A9 8A3 7E9 3D9 3E3 3F5 1F4 2D6 2E2 3G4 1I6 2H9 6E4 5E8 5D5 6F9 6I8 5I1 6B1 5B6 6H6 5G9 7D2 9D3 8D4 9E5 8C5 7C1 9C6 8F6 8G1 9I4 7G6

342: 6D1 4E6 5I3 8F6 4D9 a29 a49 a57 f5r q91r3 3E3 9D3 7C3 1A3 8C1 1C6 2I6 2H1 7I1 9G6 9H5 8B5 4I5 3G5 5H2 4B2 5A9 b9r8 r1B 1H9 7H7 s88 uDAIc2 a22 t7Fr x4 8D8 7G8 7E2 a28 cEc l58 2C5 6A5 5C8 5E5 6E8 o3F2Br p157r4 r1D 1B7 2A4 3A2 2B8 1D4 2D2 3F8 2F7 2E9 1G2 3I7 5F4 5D7 6G7 6I9 7B4 9A8 9B9 8E4 7F9 8I2 9I4 8G9

343: 6B5 6F7 5H3 8H5 7A5 1A4 6H6 t9Gr x9 x9 2H9 1I7 3G8 9H7 c1b gEc bIc6 d5r b5r2 o9G7Br 8B8 8C7 dCc a41 q83r9 eDAc9 uEBCc2 r9G 7I8 7E3 8G3 8I1 6G1 9I6 8E6 h24 pBCEc2 r1D 5D6 5F8 9E8 1D8 8D2 4F2 1E2 3A2 1B9 3D9 4C9 4D3 5E1 2D1 3C1 1C5 2C3 1F3 2E4 3F5 2F6 3B6 2B7 3E7 4B1 6D4 6I2 4I4 9C2 5B2 5C4 7B4 8A9 9F9 9G4 7G9

344: 1B1 2B7 2C4 2A3 1F4 4F8 1H5 1G7 4H7 8I7 7I8 3D2 3H9 cDc d6r a64 c6b d5b h59 4E2 8F2 p359r5 q67r1 q59r3 u824r9 o6A8Bc b8r4 q68r6 x9 b8r9 cEc dAc e76r1 e86r6 h89 6A8 8B8 8A9 6G9 5I2 2G2 2I6 6B2 9I9 o5A7Cc r4C 4D9 2E9 2D5 5B9 5F5 4C5 4B3 6C6 5A1 6D1 5E4 5H3 6H4 4G6 7C1 8C3 8E1 7D3 8D4 7E5 7F9 9F6 7B6 3A6 3B5 9B4 9A5 9H1 9G3 7G4 8H6

345: 1E7 6A7 4G4 1H4 3D4 2A4 9B4 7C7 9G7 8B5 6H6 4D6 4A5 6I8 a38 a63 c4b q42r1 u358r2 x1 x9 2F9 9F5 7F2 1B2 3F8 1G8 6F3 d9r dCc a73 eICc1 h28 o2G7Ic p149r9 q38r1 r2C r3A o2E1IR r1I a83 t7Ar 6B1 4C9 1A9 3A6 2C1 1C3 3E3 2E6 1D5 3G1 3I2 2I5 2G3 1I6 5E5 5D1 6D9 4I1 5H3 5G9 7B9 9E1 9D3 7D8 8C8 5A8 5C2 9A2 8H1

7A1 8A3 8G2 7I3 7G6 9H8 9I9

346: 6C5 4I6 4H4 1B5 1H9 **a49 a86 fGc 8G4 a37 o8F6Ec cDc 9D6 2E6 q41r1 d1b eECc1 pADGc7 r1E 2D4 2G1 3G5 2F5 uGBEc2 3H2 6H8 6I3 a38 a62 b8r8 c8r d7r cEc fAc h68 x7 f4b fCc a17 r4F 4B8 3C8 3B6 2B7 2I8 5A6 5D8 8C6 8A8 9E8 7D7 9C7 6A7 4C1 3A1 1A4 1C3 1E1 3F7 3D9 3I4 1I7 5B3 5C9 6D1 4F3 4E7 6E9 5F2 6G2 5G7 7A3 7E2 9B2 7B9 8F9 8I2 9G3 7G8 9I9**

347: 2A9 5C1 4C9 7B4 7E9 9I9 6G9 6H3 2D3 **a46 a77 d6b 6F6 i58 q41r4 q49r4 t4Ar uEGIc4 uFGIc4 bIc4 d1r 1C6 a37 b7r7 d7r 8D6 bIc6 o1H8Ic q58r8 x1 1E1 3E4 2I1 1H4 5G4 4D4 8I4 9F4 8F1 9H1 8H7 9A7 eDCc8 uDCIc2 cFc h57 cDc 1A2 pCDIc2 x8 2B8 1B7 3A5 3C3 1D5 3F7 3D8 2F2 3I2 3G6 2G7 4A8 5A6 6E2 4B2 6B5 5F8 5H2 4I5 4H6 6I8 8A3 9C8 7C2 9D2 7F5 7D7 8E8 8G2 7G3 7I6**

348: 6B1 4E5 4F1 **a39 a47 a53 cHc 7H5 d1b a13 g2b q29r7 q36r8 c5r 5C9 6H9 9A9 8A4 7A8 6A7 4I7 e62r4 9E4 a87 e63r8 gIc d2r r1C 2G4 1D4 6F4 5H4 6I8 1H8 3F8 6G5 u815r6 x2 i38 9I1 7C1 a92 a72 c9r f8r v2349r3 x6 7F6 7E2 2F2 1C2 3A6 2A3 1E3 3G3 1I6 5B6 4A2 5D3 5E8 5I2 4H3 4G6 9B2 8C6 8B5 3C5 2B7 2I5 3I9 2E9 7B3 9C7 9F3 7D7 3E7 3D1 8E1 8D8 8G2 8I3 9H6**

349: 2H1 5H2 6H4 4G6 6I7 7G1 8H7 7H6 9G8 3G9 4B5 4A7 5E7 2F7 3C7 **c8r d1r e93r5 g7b p349r2 c2b t9Ar u718r3 a83 c9r q93r3 v3569r3 x9 5A9 9B9 7C2 3B2 2D2 1D6 3E4 1I2 9A5 2C5 1C9 3A3 2E9 1F3 2I3 3H5 6D9 5D5 6E1 5B1 1A1 1B4 6B3 5G3 6G5 8C3 8D1 9F2 4E2 4F8 7E3 7D4 8A4 8B6 2A6 2B8 7A8 8E8 7F9 9H3 7I5 8I9**

350: 3C8 1I5 3F5 2G6 6B3 4E3 8C5 5A5 9F6 8B6 1A7 **a51 dFc bIc2 q39r3 7F3 2F4 3B4 a12 a44 cAc c9r c4b 4C6 6H6 a64 9A4 7A8 a67 cHc d7r h47 7E4 8D7 2E7 8H4 7H7 pBFGc2 s78 3G3 2D3 9I3 9G8 dIc vAEHIc9 bIc9 u679r9 x9 2A9 2C2 1B1 3D1 3E2 1F9 2I1 3H9 5B9 4A2 5F1 6F2 6D9 5D8 4H1 5G2 6G7 5C7 6C4 5I4 6I8 4I9 7C1 7B2 9C9 9D2 8E9 8I2 7G9**

351: 1B7 3H5 2E5 5B5 9C5 9I3 1F3 4B3 3A3 4D7 5D4 9E9 6F9 7E7 8E8 5F8 **a79 a82 h24 x1 1G1 u358r1 q42r1 eFCc1 x6 5I2 5H3 6E3 6H7 8G7 a94 r6G r7G s68 u214r6 pCFIc6 c2r 6C2 2D9 r1H a16 o4C8Ac r1H 1D8 3D2 1H2 3I8 1I9 3C9 3B4 2C1 1C6 3E1 2F6 3G6 5A1 6B6 6A8 2B8 2A2 4C4 4F1 5E6 6G4 4I6 8B1 8A4 7A6 7B9 9B2 8F2 9F4 7G2 7I4 8H9**

352: 6B9 5F4 7G4 8A4 2B4 7B6 4B7 1F7 **a81 a95 a97 dHc bIc2 bIc8 bIc9 g5r 4I1 q16r6 u214r3 x2 x3 o6I4DR 6C5 5E5 a75 9F9 8H9 eHCc3 p348r2 r3E cIc o1I3Cr a18 q42r3 a23 d1r x6 4F8 5D7 6G7 h89 2G5 9A5 8C2 1A2 3C3 3G2 1I3 2I9 3D9 1G8 3B8 2A1 1B5 3E1 3F5 1D6 2D8 2E3 3H6 5C1 4A3 5A6 6D3 6E6 4D2 6I2 5H3 4G6 5I8 5G9 9B1 7C7 9C8 7D1 7E2 8D5 8F6 9H2 7I5 8I7 7H8**

353: 4H1 6A1 3B1 5H9 9F1 7F8 6F7 3E7 2G7 2I8 5A5 **c5r f9r 8B2 5C2 5B3 9H7 a75 bIc2 cCc c3r 3H2 o7H4Ic q71r3 eHDC3 s88 7C5 a74 u235r4 u835r6 x6 8A4 q71r4 c2r eFAc9 o3F6DC a52 a86 p235r4 r4I 8I6 7H3 3G3 2C3 3C4 1D3 1F2 1H4 2F4 4D2 4E4 4F5 6D9 3F9 2B9 1B5 1A8 3A6 2D5 1E6 4A9 4B7 6C8 5F6 4I3 5G4 6G6 6I2 4G8 7B6 7A7 9B8 9C9 8F3 9E5 9D6 7D4 9G2 9I4 8G5**

354: 1F7 2G9 5C4 6C8 7C6 7A3 8A2 8B7 9A9 7B4 8E4 8F9 4C9 3B9 6I9 **a38 bIc8 c2r d6r a62 bIc2 q84r6 s68 u627r1 x1 5I1 t1Er x5 4I2 7G2 a65 c4r 3E6 2E8 3A8 2H2 2A4 e84r6 fDc o4G9Hc 9I4 1H4 p359r5 a55 r5G 9G7 6H7 4D7 5F6 5D8 6D3 4G6 8D6 7F8 7D1 1E1 2B1 1A5 3F2 1C2 3C3 2D5 1G3 3H5 1I8 4A1 6B5 6F1 6E2 4E5 5H3 5G5 9F5 7I5 9H6 8G8**

355: 2E8 3G2 9A1 2C1 2B7 3B6 1B4 3D4 9B2 **a48 a78 c8r d2r u638r9 x5 b9r5 x9 7A9 8I9 8C7 uHCDc9 2G9 a33 a23 n5r x5 o4A5ER 5C2 5B8 7C8 h35 7E2 f4r q49r7**

x3 4A6 5E6 s88 a55 4G8 4H7 t9Hr 7H6 2I6 2H4 5I4 4I1 5F1 5D7 6F9 1D9 3C9 2A3 1C5
3F3 2F5 6C3 5A5 4F2 6I2 5G3 6H5 5H9 8E5 4D5 4E3 7B5 8B3 9D3 7F7 7I3 1H3 1I8 9G5
9I7 9H8

356: 2B1 3F2 1E4 2D8 2F5 4H1 5E1 5D7 6H2 4G4 6A4 7F1 8D2 4E2 5C2 a66 q18r7
eIFc7 q41r8 t9Fr uIBFc3 3G3 3C5 x8 u814r8 r7I 7D6 4F6 6E9 6D3 4D5 c6b h56 c5r
eHAc8 o7E8IR q41r9 s68 e85r8 x9 9H6 8H4 7C4 cCc e91r3 r1F r7E 8F9 7E7 1F7 2E3
1B3 8C3 8B6 5A6 2C6 6B5 5I5 6I6 9A5 7A8 1C8 2A9 3A7 2H7 3H8 1I9 5B8 4C9 4I8 5G9
9B9 9F3 7I3 8I7 8G8 7H9

357: 1G4 2G5 8B7 7A8 8A5 6B5 8D4 7E5 9D9 8C9 9C2 8I6 9E6 3I9 a11 a67 3E7 q15r6
a46 t1Er u619r3 x2 7D7 4F7 5F4 4C4 r1E 3D2 cFc 6D6 p169r3 s48 o6G2Ic a32 c2r
d6r cEc eGEc2 s48 cIc c4r a42 c1r s48 3C8 2C1 1A6 2B9 1B2 2F6 1F9 3G1 2H2 2I8
1E8 2D3 1H3 5C6 6E3 4D8 5B8 4B3 5I3 6G8 7I1 8E1 6F1 5E2 5H1 4A1 6A2 5A9 4I2 5G7
6H9 7F2 8G2 9G3 9H7

358: 3G2 5G7 8F9 a98 bIc9 5B9 d9r p267r4 qIDc2 6D9 4G9 5I1 1G1 2G8 6G3 2D5
o4D7EC o3D1Br 1I5 q18r7 t2Ir cIc b2r3 u815r8 x3 dEc 4E5 5E8 b8r8 e94r2 gBc
x6 r6E 5F4 b5r6 r4B 7B4 r6C 4A3 6C4 3A4 2I4 1H6 3E6 3F1 4B2 4D1 6E2 4F6 4H4 6I6
7C2 8C3 2B3 2C6 5A6 5C5 3B5 1B7 3C8 3D7 1F8 1E3 8A5 9B6 9A7 8B8 7E1 9D2 9F3 8E7
7D8 7H3 3I3 3H9 9H8 9I9

359: a23 a31 a71 a79 cEc d5b 4E6 5C6 a51 f7r fAc a74 h19 7E1 8A1 7A9 8D9 2E9
2F3 8E3 5D5 6A5 4D1 6E8 5H1 5G3 7H3 9A3 1C3 9B7 3E5 a72 o6H4Ar d4b q37r8 a98
t8Hr u257r8 a18 cAc x4 c9b mGc pADGc2 r5I 4H4 5I8 4C8 2A8 2C7 5A7 6F7 5F4
6B4 1A4 3B2 2B1 1D2 3F8 3G1 2G4 1H8 1G6 1I9 4A2 5B9 6H2 4G7 6G9 9D8 9G2 7I4 8C4
7C2 8F2 7F5 9F6 8G5 8H6 7G8

360: 2A3 2G1 5A1 5B2 9H1 8E1 2I9 2F6 4F5 5F3 a83 g9r a76 b9r9 c8r a75 a95
p249r8 1D2 9F2 3F9 1F7 3I2 8I3 7D3 9I5 8D5 cAc q51r5 3G8 t4Dr cDc h69 6D9 5E6
9D6 9E9 c4b r1C 1G6 a35 r6C 4A7 9A8 o9B3CC s57 uHAEc4 x4 5C4 6A5 5G5 7A4
7B5 1C5 2B8 3B4 3C7 2D4 1E8 3E3 1H3 3H5 6C8 4B6 6E4 4D8 4H4 6H6 6G2 8C6 9B7
8B9 7H2 9G4 8G7 7G9

361: 4B5 8E9 8H5 2I5 3E5 3H9 5F5 5I9 5G1 4I2 5C2 9G6 3B2 a21 a67 a77 a84 c1r
cBc 7A7 4H7 d7r a83 dFc o4F5Ar p169r7 t3Gr u517r3 x3 c3b q53r8 i49 o6F1Ec
t1Cr e53r8 1D1 cCc s88 5H4 2G4 1C4 3A8 3C1 2C7 2F8 2E2 2D6 1H8 6A1 4C8 6E4 4A4
6B3 2A3 2B9 5A6 6C9 5E3 3D3 1E7 1I3 3G7 4F6 6F7 5D8 4G3 9B4 9A9 7F2 8F3 9F1 7D4
7E6 8D7 7I1 8B1 7B8 7H3 9I7 8G8

362: 2B6 5H5 7G5 4I6 8E4 7F6 2E7 5F7 a13 8F3 7I3 a38 a72 4H2 dEc a52 f3r b3r4
h36 6E6 3D6 3E3 5D3 6D2 5A2 q84r1 t7Br t7Br u149r7 uBEHc8 2A8 a48 c7r d4b
6G3 3G9 e63r7 v2478r1 r1G o3H9Ic x1 3A1 2D1 1D4 2C4 1E5 1F2 1I1 1G8 3I7 3H4
4C1 4B3 1C3 1B7 6B4 6A7 5B8 6C9 6H1 4G7 6I8 5I9 7B1 9C7 7C2 8C8 9B9 9F1 9E2 9D5
7E8 7D9 8G1 9I4 9H8

363: 2B4 1B2 6E5 4E3 5H2 6G4 5D4 4I1 1G1 4H7 8I4 3H4 c6r dFc f8r fAc bIc9 f7r
c7b q57r1 e96r1 q72r5 q48r8 c7r t3Fr a27 c5b t8Br cBc a77 a97 c9r cHc eHCc5
u847r9 v2478r9 o9E2Dc eDBc8 c8b x9 3A9 2E9 1H9 4B9 5A8 6B1 5C7 5E1 6D7 4D8
5F9 7A1 9B7 8B8 9C9 9D1 9E2 2D2 3E6 3F8 1F7 3G2 2G6 1A6 2C5 1I5 3I7 2I8 2H3 6C6
6A3 7C3 8A5 9F5 8F3 8D6 8E7 7E8 7D9 9I3 7H5 9H6 7G7 8G9

364: 6F1 6E6 5G1 8H2 6C5 6B2 a43 a44 b3r6 b6r7 cFc a22 fGc i56 cEc 2E2 d7r
a77 q84r9 t2Dr uHCEc9 p135r9 x9 1C9 1A2 bIc3 7A6 3B6 d1r 2F8 c2r 5A3 q51r8
eHBc8 o1I6Hc bIc4 r5B 9I4 6G4 8G9 5H9 2I9 3E9 3I1 2A1 3A5 1H8 3C8 2B4 1B3 2H3
3H4 1I7 5B8 4A7 4C4 5D7 5E5 6I3 6H7 4G8 8C1 7C3 9C2 8A4 8B7 7D2 4F2 4D9 8F3 7E4

7F5 2D5 1F6 1G5 2G6 8D6 8E8 9F9 7G7 7I8

365: 5H9 9D9 8H1 **a41 a46 b9r3** 6H3 6G5 8C5 7C3 8F3 **a86 d1r** 2A5 1G9 2F9 **d4r cFc q14r4** 5F4 7D4 5A7 **r2B** 1A6 3D6 4F6 4D1 1F1 5C6 **q83r7 x8** 2B1 9A1 6C1 **pAFHc2 s88 uHAFc8 v4589r8** 1H8 **r1I** 7I7 8E7 9E6 8B6 7F8 2D8 3C8 2C4 3F7 2E2 3H2 1I5 3E5 1E4 3G4 2G7 2I3 6F2 5B2 6A8 6D7 4E8 4I4 4G2 5I8 7A2 9B8 9I2 9G3 7H5 8G8

366: 2F8 2G2 1A2 2H7 5A8 4B9 3A9 1I9 5D9 9C4 6A4 8B2 6C2 4C7 6D7 9E2 7E7 9G9 7F9 3I8 3H4 5I4 4E4 5H1 1E1 **a53 a71 q53r6 t9Hr v3567r6 x3 x3 x5 r3E r1F r3E q19r5 r5E u358r5 a15 r3G cIc p149r3 r9F** 9I1 3G1 2C1 2A3 1H3 3E3 2D6 1F5 2I5 7B1 7C3 8A6 8D1 9D3 4F3 5E6 6B6 3C6 3B5 5C5 4D5 6G5 6I3 4H6 4G8 8E5 9F6 8G3 9H5 7I6 8H8

367: 2C5 1G5 4E2 5D5 6D3 4F6 5I3 9B3 9D1 8F4 7E5 8A2 7G2 3D8 4G8 4H1 1B1 5C1 **a67 bIc8 cIc cGc q47r9 u189r9 a29 c1b p347r9 cBc k296 o9I7BR v3478r7** 2E3 9E8 8C8 **e83r7 dHc x7** 2B7 1A8 1F7 1E9 3E6 1H6 3H7 3G3 3I1 2H8 2I4 5A7 5B8 4C9 3B9 3C2 6B2 6C6 4D7 5F9 6G4 6I7 7B6 7C7 9C4 9A9 8E7 7D9 8G1 8H3 7H4 9I6 9G7 8I9

368: **a22** 4A2 7B2 **a31 a44 f3r** 1C2 1A6 3F2 9C6 **a79 m5r q49r9 x5 c1r r6H a35 x7** 7I1 3G1 7G9 4H9 **c5b q48r3 x3** 3I4 6H4 1F4 7D4 1H5 **t3Ar pAEHc7 uBCDc5 x3 dDc o8I9ER a77 o9A8FR r3A** 8I7 5G7 3H7 2F7 1B7 1G3 6G2 5D2 5F9 6F6 6D1 5I6 9E7 7A7 8D3 3E3 2D5 3A5 4F3 5E5 6B5 6I3 4I5 8C5 8B9 3C9 3B8 5C8 5A4 2C4 5B3 2A3 2B1 9A1 8F1 7F5 9F8 9D9 9H3 7H8

369: 3B1 2D3 6G6 9H6 7D6 5D1 1A7 1B8 1C6 2F6 1H3 **a14 a15 a32 a39 a55 a73 c6r** 6E5 **fGc h29 x2** 1G2 3G9 1F9 5E9 4B9 9D9 7I9 7G8 **a94 dIc bIc5 p459r2 uEADc4** 3F7 **q69r7 v4589r4 cFc r9F** 7E7 9F4 6D4 5B4 4F2 5I2 6A2 9C2 7A4 8A1 9B7 5C7 4C8 6B3 4G3 4H4 4I1 2H1 2G7 3H5 2C5 3C4 2E4 3E8 3D2 2I8 5G5 6I7 5H8 7C3 7B5 7F1 8E2 8F5 8I3 8G4 9I5 8H7

370: 3B2 6E8 6G2 4C2 4I7 7E2 8D5 9E7 1D7 2A7 8B7 7G7 5B8 4B1 **a35 d8r fIc q92r9 a29 o2C3IR a33 t3Er** 2E9 **dFc q47r9** 9C9 **x3** 2G3 1G8 2F8 7I8 8A8 7H5 2I5 **p379r1 s58 u148r3 a13** 8F3 8E6 1F6 1C5 6A5 **q26r6 e53r6 uFAEc4** 7D9 4F9 **o4A6Ir x4** 3D4 3E3 6C4 5A6 2C6 3A1 2H1 3I6 6B9 1A9 1B3 4A3 5D3 4E4 5G1 6I3 5I4 6H6 5H9 8C1 7A4 9F4 7F1 9I1 8G4

371: 5C5 4C7 4F1 6E2 9B2 9A1 6B1 8C6 7C9 7A3 9D5 7H5 6A6 2B6 9I6 **a84 dHc a68 cHc** 6D9 6G8 **dGc** 7F4 8F2 7G2 1H2 1G1 1I9 8H1 8G9 **s78 u168r3 b2r3 o3H2Er r1D** 8D8 **q83r7 w3F4 x4 x7 dEc** 1F6 **c3r e83r7 p168r3 r3H** 8E3 3F3 1C3 3B4 2E8 1D4 3E7 1E5 2A5 1A7 2I4 3I5 2G7 2H3 3H8 5B3 6C4 4B9 4E4 5E6 5F8 5D7 6I3 5G4 4H6 5H9 9F7 9G3 9H4 8I7

372: 2H6 7E6 9A6 3B6 2B8 7F3 7D9 8H5 7G8 **a74 q14r5 u637r1 x1 x2 dIc** 9G7 **a87 o3I6Gc** 6E4 **a52 b6r7 bIc7 fIc g6b x2** 1B2 1G5 4B5 5I5 4I7 4G4 2I4 **cGc c5r a59 a49 pBGIc1 q52r3 c3r eGCc3 o3A2Gr r8A** 8F7 8A1 6B1 6C7 5C9 4A3 2C3 3C5 1A4 2A7 3A9 3D4 2D5 1E7 3E3 3F8 1F9 1H3 2G9 5D7 4E9 4D2 4F1 5E8 5H1 5G3 4H8 6H9 6G2 3I2 3G1 8C4 7C2 7B7 9D1 8E2 9F4 7I1 9H2

373: 3C3 1I5 6D7 7I3 4E3 8F3 **a17** 3H7 **a18 a19 cEc c2r** 1A9 **c6r a51 d6r b6r9 d2b d7b a79 j13 f5r pAFHc2 q16r6 eGFCc6 u637r8 d6b uIAFc1 v2457r1 x1** 3F1 3D8 1E4 1H1 2I2 1F2 2D6 1G6 6A1 5A3 4C2 5D1 6F6 5E8 4B8 1C8 1B7 4D9 4G1 5H2 6H3 4I6 9A2 8E1 9F8 9E9 9I1 7G8 6I8 6G9 3I9 3G4 8G2 7D2 8I4 9D4 8D5 9C5 6B5 6C4 2B4 2C1 7B1 8C7 8B6 5C6 5B9 7C9 9G7

374: 5B8 4F4 5H3 1H8 **a23 a92 d4r d2b d8b a82** 9I2 **f3r o7A9Gr q84r7 uCEGc1 uBEGc9 a19 x4 cBc** 6B5 **cBc d8r gFc h49 f2r a31 p369r1 q71r5 t1Ar a17 c1r a15** 9C6 2A6 4B6 5C2 3A2 2H2 6A1 4D2 8B2 7F2 8F6 3D1 9F1 9D8 2F8 2D3 6F3 8A8 **h37** 9B3

1A3 1B7 7A7 9A5 8E7 3F7 2E5 1C5 2C1 1I1 3H5 2I7 5F5 5D7 6D6 5E9 4E1 5G1 4G5 5I6
4H7 6I9 2G9 3B9 2B4 3I4 7D9 8C9 7C4 8G4 7I5 9G7

375: 3D3 1D7 2F8 5F4 4F7 8B3 8A2 9F1 7F3 8E6 5D6 4D2 7H6 **a77 b4r5 c2r** 2H2 5G2
6C2 1B2 5H3 9G3 **a11** 1H1 **bIc8 fCc fIc h46** 2G6 3C6 2C4 3I4 3H7 8G4 8I7 **s68 uABIc8**
v2689r5 x8 1G8 **bIc8 c3r bIc9 e86r9 pBEGc9 q17r9** 9D9 3E9 2D5 1C5 2A9 3G5 1I9
6A5 5E5 6F9 4I5 5I1 4B1 3A1 3B8 5A8 5C7 5B9 6H8 4G9 7A7 7C9 9C8 8F5 9H5 7I8 8H9

376: 3A7 6C1 5B8 5C4 5F7 6D8 1E8 2E4 7C3 2A3 4H7 4I8 **a46 a49 a65 b4r2 fFc a81**
h25 uIACc5 x6 6A6 5A9 **cFc c6r q61r3 d3b** 3F1 2F6 **eIFc3 o2B4Cc r6I** 2G1 8B1 **cHc**
dGc p348r5 9I6 **s78** 2H2 3I5 2B5 6I2 5G3 1I3 3D3 1F2 3C2 3B6 1B4 1C9 3H4 1G7 3G8
4A2 4C5 6F3 6G4 5H5 6H9 9B2 8A5 8C6 7B9 8E2 5D2 5E6 9E3 7D6 9D1 9F9 7F5 7H1 9G5
8I7 9H8 8G9

377: 2F8 1I5 9I3 8F3 **a12 a27 fHc a67 bIc2 f8b a82 gEc t3Ir** 2I2 1A2 1E3 6B2 **a39**
fAc q15r8 t4Er u735r6 uADHc6 o9C6Ac bIc6 d6r cDc r7B 5E2 4G2 **b5r6 x1 t7Hr**
7I1 1G1 3E1 1C8 2A7 3B4 3A3 3C6 1D7 4B3 5B6 4A8 7B7 9B5 7E5 6D5 4E6 4H5 6H6 9D6
7A6 8H7 **h49** 8D1 **x9 r4I a59 eGCCc9 r6A** 5F4 4I4 8E4 2D4 2E9 9A4 9C1 6A1 5C9 4C7
4F1 6F7 4D9 5I7 5G8 6I9 3H9 3I8 8A9 7F9 9F2 7H2 9H8 9G9

378: 1G1 7A7 8E1 3E7 3F6 4D7 6A6 5A1 4E6 4H1 6F1 6G3 4B3 9D6 7C6 7H3 9F3 2D3
3A3 7E5 7F8 7G4 5H4 **a15 c5r o9C6BC a14 uDCIc8 a58 cDc qFIc2 q96r4** 4F4 **f2r**
q49r9 8I5 2H5 **pCDHc2 r1C** 2A4 2E8 **r9E v2459r9 x2 x9** 1A9 1C8 3C2 3B5 2F9 1D2
1E4 2G2 2I7 3H9 6C5 6B4 5B8 4C9 5D5 6D8 6E9 5F2 6I2 4I8 5G9 9C4 8A8 8B9 9E2 8D4
8H2 9G7 9I9

379: 3C9 3E1 1I5 2H7 7C5 7A1 9I7 8E7 7I2 7H9 9D9 7D3 9G3 8G5 5D5 6D7 5C7 **a33**
a76 b4r1 cEc f6r qHEc2 qCDc2 e85r2 qIBc2 3D2 5F2 6F1 5G1 9E2 8A2 9F5 2E5 **d4r**
u359r6 a36 cHc u149r6 uCEFc6 o2A5Bc t5Ir 3H3 3G6 5H6 **cIc b5r8 eGEc8 h39** 6A9
5B3 2A3 5A8 6I3 5I9 **p349r4 p267r6 x8** 1B8 1C1 3B4 2C6 2B2 1D6 2F8 1H4 3I8 4B1 4C2
4A6 6C4 6E6 4D8 4I4 6G8 9A4 9B6 7F6 8F4 7E8 7G4 8H8

380: 3F9 1B9 9D6 8B6 7H9 5I9 6C9 6A6 2C6 1E6 5G2 4H6 1A1 2A5 2I4 **a17 a18**
a47 a88 9C8 **c2r cHc v2348r7 o7C9Gr x5 cDc** 5D8 7E8 **a82 a84 q59r3** 7A4 9F4 **a85**
u417r5 cFc a53 e74r3 p369r5 r4G 4B4 5A3 5C7 6B1 5E1 2F1 2D3 2E2 6D2 6F3 6E4
4F5 4E7 1D7 3E5 1G5 2H7 3B7 2B8 3I8 4G3 5H4 6H5 7C1 7B3 9B2 9A7 7D5 8F7 7F2 9G1
8I2 9H3 9I5 7G7 8H8

381: 1A8 1H6 6G3 5F2 2F6 3H4 3I2 3B1 **a35 a39** 1B2 2D2 **a24 a94 c5b b4r1 i59**
u934r7 x5 x5 2B5 2C9 2A4 9C4 7B9 7H8 6I8 8D8 **p349r7 q96r9 eHDc9 o9D4EC t7Er**
a81 r9D o9H8Er w8C5 a75 dAc u759r5 8E9 6D9 6E4 1D4 4D6 6A6 6C2 4C5 4A1 4E7
1F7 3A7 1C3 1E1 3E3 6F1 5E5 5H1 6H5 8C1 8A2 7A3 9A5 7C7 7D1 7F5 7E6 9D7 7G2 7I4
4G4 4I9 1G9 1I5 8G5 8I7 9H9

382: 7A2 8G8 7D7 **a76 a96 d6b** 5H5 6F5 **a58 qDCc2 u158r7 uGEFc9** 6H9 4G2 4C4
b3r2 x7 1A7 3A4 3C5 3B2 1C8 2G7 3G9 2E9 1E2 2H2 6C2 5B7 6A8 8A5 8B6 9C7 9E5 8F9
4D9 8I7 1I4 **q17r1 r9G** 7H6 **a91 x1 x3** 9F6 **i18 c4r p148r3 v2346r1 r5A** 4A1 2B1 2A3
6B3 5A6 6D6 5E1 5D4 6I1 1H1 3D1 1F3 3I3 4E3 4F8 5G3 4I6 7F1 9D3 8E4 7E8 9G1 8H3
9H4

383: 3E1 2I2 3A2 1H7 5F4 4D6 8A8 4C8 9D2 3H4 4I4 9H1 4A1 **a57 bIc3 f7b q62r8**
1G8 7G6 8B6 7A7 8F7 8D1 6F1 5I1 **f5r u148r3 v1468r3 a13 t5Gr u935r9** 7F9 2F3 **a79**
x5 7D5 8E3 5D3 6E8 2D8 5E2 6B2 4E7 5B7 5H8 9G3 7C3 **a45 s78 pACGc9 r6A** 2H6
1A6 1B3 6A3 5A5 4B9 3C9 2B5 2A4 1E5 2E9 3G5 1I9 4H3 6I6 6H5 5G9 9B4 9C5 9A9 8I5
8H9

384: 2C9 3D7 1C7 3H4 9H9 9G7 4H7 5A7 6F2 a12 a21 a23 a73 a96 a66 c6b dIc 3E1 x1 dAc dCc q68r8 u268r8 1I8 1G2 5I2 3I3 2F3 p268r8 a88 vACFIc5 r7F 7C3 9D3 x5 b3r5 o5E4Gr dDc 4I1 6H5 2G5 1E5 2H1 1H6 8G1 7A1 8A9 7E9 7D4 5E4 6C4 5C1 6D1 4F8 2E8 3F6 2B6 6B8 5B3 4A5 3C5 3A8 3B2 5D5 4D6 6G3 4G4 5G6 9A2 8B5 9C8 8E2 7F5 9E6 8D8 9I5 7I6

385: 2C4 3B7 4G8 5H4 7D8 2F8 9F7 4D7 4E4 8D4 8E2 9G4 7H7 3A9 2H2 3D2 3F3 5D3 7G2 a25 a39 bIc6 q62r5 x1 x5 c9b b7r6 dIc e62r5 p138r5 t8Cr 4B3 d8r u438r6 v3478r6 5F5 5I2 4C2 fCc 3E5 eHEc1 r5C 1C5 1B8 2G5 2I9 3G6 2B6 3C1 1D6 1E9 2D1 1H1 4A6 6B5 5C8 5B9 4F1 5E6 6D9 6G1 4I5 8B1 7A5 7C6 9C9 8C3 9E1 8F6 7I1 9H3 8H5 9I6 8G9

386: 2A9 1F9 2I4 2G5 6G9 7B7 9D9 1I7 4H7 6D7 3F7 a74 a82 d3r 3C3 a26 dDc bIc3 6B3 1B6 3G6 o9F7Ar 8A4 a71 q17r1 r7A 8D2 a81 7G8 u512r2 v3689r1 x5 5H5 5C8 p125r2 q47r5 9F6 2D6 7A6 6C6 7D1 2F3 8E3 8F8 h15 8I5 9C5 8C1 9H1 1G1 2E1 3A1 2B2 1E2 3H2 4B1 4A2 5B4 6A5 4F5 4D4 3E4 3D8 5D3 6E8 6I1 5G2 4G3 4I8 7F4 7E5 9I2

387: 4I3 1A8 3I8 d6r 6A5 a51 b6r4 b6r7 cAc 5B3 d4b a42 f3r h23 3D2 2A2 3A3 2E3 8D3 q72r5 a35 q47r7 a77 q69r8 c8b c8r 7H8 u267r9 x4 d5r dEc e85r8 x4 o1E8Fc x9 a29 c1r cBc c2r 6I1 6G4 6H7 2G7 2I5 2H9 9I4 p124r6 r9G 4D6 3F6 2D1 1B1 2B6 3G1 1H6 5F1 5D7 4B7 5A4 4E4 1F4 1E9 6D9 4C9 3B9 3C5 5C2 6B8 5E8 4H2 5G6 7A7 8C8 7D4 8B4 9B2 7B5 9E6 8E5 9F7 9D8 8F9 8H1 8G2 9G5 7G9

388: 1C8 2G4 6B6 4A8 6D8 5G8 7F7 8H8 1G6 3A6 2F6 a52 bIc3 dIc a93 dIc 6H2 4E2 a55 o9A7Hr r5F r1I r5I 4B7 2C7 1E7 6I7 4I9 cFc 1F1 h49 c8r q53r1 r5I 1I3 t9Dr u268r9 a29 x1 7H3 9A3 s88 v1279r5 a15 t3Br 2E3 2D9 1D2 3E5 2H5 1B5 3I1 2A1 2B2 6G1 5B1 6C3 3B3 3C9 4G3 5F3 4F5 5I5 7C1 7A2 9C5 8B9 7B4 7D5 9D6 9E9 6F9 6E4 8E1 8F4 9H1 8I2 9I4 8G5 7I6

389: 5A4 2B4 9A2 9H4 3I4 8D4 9D7 7I3 8G7 7A7 9G1 7E1 4D1 6F2 a88 cEc dBc f5r t2Cr dCc x6 u126r6 v1246r6 o3G1Ar b1r6 r2I 5I1 5H7 2I7 4I2 c1r pEFGc8 3D2 2H2 2C5 8B5 8A1 1B1 3H1 8C8 q43r9 1I9 3G8 2D8 1A8 3E6 2A6 5C6 6D6 5F8 6I8 4G9 6B9 4A3 3C3 3A9 5E3 4E5 6H3 5G5 1H5 1G6 4H6 9B3 7B6 9C9 9F6 9E8 7F9

390: 1B4 2F4 2I5 4E6 7H4 7G6 1H6 8I8 a13 a31 a63 a93 8B3 8A6 5B6 5F8 5D3 6D4 5C4 a97 cGc 1E8 dAc d6b 6B8 j78 dHc p348r1 c4b o7I8CR uECHc7 x7 9H7 9G3 6H3 6G2 1G1 3H2 r3B 3D5 d4r q49r5 v3679r9 r2E 3E9 2E7 1F3 2A3 1A9 3C7 3B1 1D2 1I7 2H9 2G8 6A1 4B5 5A7 6C9 4F1 4D9 6F7 6E5 4G7 4H8 5I9 8C1 7C2 7A5 9B9 9E1 7E3 9F5 8F2 8D7 7F9 7I1 9I2

391: 2E5 4G5 6G3 9C3 8C7 8A5 1C5 9I1 7A1 8B8 8G2 9E2 5I2 8H6 9H9 7G7 6H7 9D7 5F7 5E8 7F8 7E3 4F3 1D3 cBc h46 o3B2Fr q52r6 uCDHc4 v1689r4 t5Cr pCDGc9 d3r b3r6 cFc x1 3E6 6F6 6I9 o3C1Fr r1A 5G6 1I6 2H8 1A8 3C9 1B4 2D4 1F9 3G4 2G9 4A9 4C6 2A6 3B2 2C1 3F1 2F2 6B1 6A2 5C4 4E1 6E4 5D9 4H4 4I8 9A4 9B6 8F4 8E9

392: 2F2 4C2 4B9 5H2 7A4 8C5 9E2 3C3 5F5 8E4 a54 a73 c8b 8F3 7F6 4F4 d9r cGc o1E3Hr o3H2Ar s68 uABFc7 r6C u259r9 3I1 a39 x1 x7 x8 x8 4I3 gHc f2r q24r5 u612r6 t4Hr a65 c4b 5A7 b5r8 e76r1 4G5 3H5 1E5 2A5 1A6 2C8 1B7 2D7 1D4 1F1 2I4 2G6 1H8 1G3 2H9 6B5 6A3 4A8 6C1 6E8 4D6 3E6 3D9 4H1 6G4 6H6 6I7 9A1 9B3 7C7 8D1 9F7 9D8 7E9 7G1 7H3 8H7 7I8 5G8 5I9 9G9

393: 9D9 9F7 4E7 2A7 1E4 2C4 1H5 a16 a99 bIc4 d9b 9A8 9B1 fAc c4r h14 4I4 5A4 4A1 u518r3 a63 cCc x2 d7b s78 u745r5 8A5 8C3 7B9 6C9 4H9 8I9 u358r1 uFDIc8 a88 t3Fr x2 qGFc2 e42r2 r4B r4G b6r2 5H1 3H4 9G4 r5C o4F5Cr 2E6 3B6 2I1 8G1 7I8 8F8 5I3 q76r6 4F6 5D2 2F2 1A2 2B3 3F3 3E1 3D8 1D7 1G3 3G7 4B2 6A3 6B5 5C6 5F5 6E8 4G5 5G8 9C2 7A6 7F1 7E5 7G2 6H2 6G6 9H6

394: 2A7 4C1 5D5 5H7 5G1 1H1 4G9 9I1 8I7 9D7 6F7 6D1 6E9 5B9 7F1 5A3 6H3 9C9 4E2 a13 a32 a48 a94 f3r pCDGc8 q49r6 r7D uGCFc6 v3469r6 2I4 s58 a16 8C3 2B3 a76 a96 d8r a85 q37r5 a95 t8Br x4 7A2 6B2 8H2 7H4 9E4 8B4 3A4 1B5 2F5 3H5 3I6 4H6 6A6 4A8 6I8 9A5 9B6 8E5 8D8 3E8 8F9 3D9 3F3 4D3 4F4 1D4 2D2 1F6 2C6 1C8 1G2 2G8 7D6 7G5 8G6 9H8

395: 2F4 3F9 3G2 4D4 6I6 9B8 6B4 1E7 a31 a52 a58 a76 d4r 5C2 6F2 5E8 2C7 a49 a53 bIc9 cCc 3C1 7C9 8G9 4I9 4H2 4G8 2H8 3A8 1D8 7I2 8D2 8C4 9C6 a35 u915r1 7A1 x5 5B9 2A9 a25 pAFHc5 o8H9Fr cFc e86r1 o9H7DR q72r3 v2379r3 a33 r2B 7B3 1C3 2B5 3B6 3D3 3E5 1F6 1I5 1G1 2G6 2I3 6A3 5A7 4C5 4E3 5F5 6E1 5I1 5G4 6H7 8A5 9F1 8F3 7D5 8E6 9D7 8H1 9G3 9I4 9H5 7G7

396: 3A8 8B7 7C9 2E9 2F3 a14 a37 r3C 2A2 r2H 3C1 9C2 5B2 8I2 7E2 1D2 1E1 8G9 1I9 a16 7A6 a84 bIc4 c9r 7B8 q75r1 s58 u568r3 o9I5Hc e95r8 u612r6 cGc 7G4 8F4 t5Fr x5 u427r5 c5b d4r e94r1 e75r1 p345r6 6I4 r3F 2D5 3F6 3E7 3I5 1G6 2B6 1B4 2H4 1H7 6D6 5F1 4F7 5E5 4E4 5C4 4C6 6E3 4B3 6A1 4D8 4I1 4H5 5I6 5H3 6G7 5G8 9B1 8A3 8D1 7F5 9E8 7H1 9I3 9G5 8H8

397: 1A6 3B7 8A2 9E7 6I8 9B1 7G7 a45 a74 d9r p169r5 q68r6 9I6 7H5 1I5 3I3 9F5 6E5 7I2 a94 cEc dDc qDBc2 a22 u367r4 u368r4 v3678r4 2D5 x9 1G1 5H1 b1r9 d5r a44 a49 4I7 2H7 h39 x9 4A4 9C4 p259r9 r3G 5G9 4H2 3G2 5E2 2F2 3F1 2A1 3C9 3A5 3D8 2E4 3H4 2I9 5C5 4C3 4B9 5B6 5A8 5D3 6F4 4F6 5I4 6H6 7B8 9A9 8E3 1F3 1E9 7D4 8D6 8F8 7F9 8G4 9G8 8H9

398: 3E5 1G2 1H4 2D4 6F4 5E7 4G5 7D8 9I5 7B5 1B9 a21 a22 bIc9 c5r dFc a28 d2b 1D7 h12 cDc t4Ar x1 x3 5I3 6I8 4C8 3B8 5F8 1E8 3I9 e93r7 s78 t9Hr 9G4 8C4 u913r6 q57r6 x1 o7C2BC x6 cBc a41 p179r3 r8A 7A6 6B6 4A2 2C2 2B1 1C3 3C6 2A7 2E3 1F6 2I6 3H7 5A1 6D2 3F2 3D1 4F1 4D3 4E6 6E9 6H1 5G6 4H9 7C1 9B2 8B3 9C7 8A9 9F3 8D6 8G1 7H3 9H6 8I7 7G9

399: 2D4 3F9 3I2 2H7 6B7 5E7 6F2 5A2 9E2 9F7 7G2 8B2 9B9 8I9 5I4 8C4 9H4 q94r5 x6 r8F o7D8AR u579r1 x1 1E1 p149r5 cBc r7D 9A5 a76 t2Fr x1 2I1 2E5 h58 dHc a33 o2B3Er x3 1G3 3H5 1B5 1A4 3A8 2G8 1F8 4B4 6C5 4G5 6I8 4D8 7I5 7H8 bHc6 e86r1 o6G5Dr q95r6 6G9 5D9 s77 8F3 3E3 2B3 3C6 2F6 6D3 4E6 6A6 5C1 4A3 6H1 5H3 5G6 8A1 7C3 7B6 9D6 7D1 9G1 8H6

400: 3A6 1H9 8B7 9H1 8C3 2A3 7A9 6C9 8F9 4D9 5I9 7F6 8G4 5G5 a92 a95 b8r8 c5r cBc q42r7 r4E s78 9F2 bIc8 t1Dr u247r2 uGBDc2 v1567r8 t4Ar x4 3C4 b3r8 p157r4 9D3 cDc 1B2 d3r dEc h36 5H3 6E3 5E6 6I6 8H6 8I8 3H8 t2Gr a37 cHc d2r r4E 4H7 6H4 4F5 6B5 2C5 1A8 3B1 2E8 3D2 2F7 1F1 1D4 2G1 2H2 3I5 3G7 5B8 4A4 6A1 4E2 5F4 6D7 6F8 4I1 6G2 7B4 9A5 9C8 9E4 7D8 7I2 7H5

Jos Vermaseren is a theoretical physicist at the Nikhef institute in Amsterdam. He has much experience playing games and making complicated computer programs. He is the author of the well known computer algebra program FORM, which is used worldwide for most difficult calculations in theoretical particle physics. He has also won the Humboldt prize for the calculations he has done with FORM.

His interest in sudoku's started as purely recreational. But at a given moment he got involved in the programming of solution techniques in the language of FORM. This worked well and the program could solve nearly all sudoku's in the collection of fiendish sudoku's of the Times.

Eventually the problem of generating sudoku's got his interest and the result is this book with hundreds of sudoku's that are not for the fainthearted. The book will keep you busy for many hours.