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The Difficult
Sudoku Book

1 Introduction

Getting a little bored with easy sudokus? Or fed up with sudokus that require you to guess the solution? Or sudokus that have more than one solution? Or sudokus 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 sudokus 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 sudokus. If you think that this is like giving away the solutions you are quite mistaken. Even when you know all these techniques the sudokus 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 sudokus 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 sudokus 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 sudokus when my little handheld sudoku game machine was accidently 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 sudokus 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 sudokus have only a single solution and expect you to use that information. There are people who do not like this and in most published sudokus this method is not used. There are arguments for and against. In this book the argument for won.

To obtain a nice collection of sudokus I had the computer generate a collection of 600 million sudokus. 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 sudokus 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 sudokus 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 sudokus 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 sudokus 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 sudokus is sudopedia.org.

3   Pencilmarks

When sudokus are easy, it is often not necessary to make notes on the side at all. Things become different when the sudokus 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 sudokus 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 6 8	1 4 8	4 6 8
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	1 2 4	4 6 7
8	3	6	1 8	7	4	2	1 8	9	5
9	5	7 8	2 4 8	1	9	6	4 2 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 X 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	1 2 4	8	3	5	1 2 4 6	1 2 4	4 6 7
8	3	6	1 8	7	4	2	1 8	9	5
9	5	7 8	2 4 8	1	9	6	4 2 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	1 2 4	4 6 7
8	3	6	1 8	7	4	2	1 8	9	5
9	5	7 8	4 2 ✕	1	9	6	2 4 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 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 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 6 7
8	3	6	1 8	7	4	2	1 8	9	5
9	5	7 8	4 2	1	9	6	2 4 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	(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	6	(1,8)	9	4	2	7	5	(1,8)	3
7	9	(1,7)	(4,2)	8	3	5	(1,2,4,6)	(1,2,4)	(4,6,7)
8	3	6	(1,8)	7	4	2	(1,8)	9	5
9	5	(7,8)	(4,2)	1	9	6	(4,2,8)	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,⊗,⊗)	9
4	4	5	3	6	1	8	9	7	2
5	(1,8)	2	7	3	5	9	(1,4,6)	(1,4,8)	(4,6)
6	6	(1,8)	9	4	2	7	5	(1,8)	3
7	9	(1,7)	(4,2)	8	3	5	(1,2,4,6)	(1,2,4)	(4,6,7)
8	3	6	(1,8)	7	4	2	(1,8)	9	5
9	5	(7,8)	(4,2)	1	9	6	(4,2,8)	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 sudokus 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 sudokus become complicated the main action takes place with the pencilmarks. Hence they are indispensible for the complicated sudokus in the main

section of the book. This is why the sudokus 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 sudokus 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 sudokus. 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 sudokus 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 sudokus from a sample of hundreds of million sudokus.

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 sudokus 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 sudokus 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 streches 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 sudokus (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 sudokus 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 sudokus 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 sudokus 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	1,689	1,689	3	2	69	7
2	2,9	7	6,8	2,689	4,6,89	4,6,8,2	1	5	3
3	1,2,9	1,6,9 ✗	3	1,2,69 ✗	7	5	4,6,89	4,6,9	4,6,89
4	3	2	9	4	5	6	1,78	1,7	1,8
5	4	1,8	1,8	3	2	7	6,89	1,6,9	5
6	6	5	7	1,89	1,89	1,8	3	1,2,4,9	1,2,4,89
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	1,2,4,6,7	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	4,2,8	9	4,6	7	3	2,✗	6,8	1
2	4,3,78	1,4,78	4,3,8	1,4	4,5,6	2	5,7✗	6,8	9
3	3,7	1,2,3,7	6	1	5,9	8	2,3,5,7	4	3,7
4	4,3,78	5	1	2,3,4,7	2,4,8	6	3,78	9	3,7
5	9	4,6,78	4,3,8	3,4,7	4,8	1	3,6,78	2	5
6	3,78	6,78	2	3,7,9	3,89	5	3,6,78	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	2 5 8	6	✕ 2 3 4 5 8	1 2 5	2 3 4 5	9	3 5 8	1 3 5 8	7
2	2 5	1 3	1 2 3 4 5	7	2 3 4 5	8	3 5	9	6
3	9	7	✕ 3 5 8	1 5	3 5	6	2	1 3 5 8	4
4	1	4	5 6 8	9	5 7 8	3	5 6 7 8	5 7 8	2
5	5 6 8	2	5 6 8	5 8	5 7 8	1	3 4 5 6 7 8	3 4 5 7 8	9
6	3	9	7	4	6	2	5 8	5 8	1
7	4	5	9	2 8	2 8	7	1	6	3
8	2 6 7	8	2 6	3	1	4	9	2 7	5
9	2 7	1 3	1 2 3	6	9	5	4 7	2 4 7	8

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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	2 3 9	2 3 9	1
2	4	1	5	2 9	7	3	2 8 9	2 8 9	6
3	3	2	9	6	8	1	7	4	5
4	1	4	6	8	2	5 9	3 5 9	3 5 9	7
5	5 9	3	2	4 5 7 9	1	4 5 7 9	6	5 8 9	4 8 9
6	5 9	7	8	3	6	4 5 9	1 4 5 9	1 5 9	2
7	2	5	1	4 7 9	3	6	4 8 9	7 8 9	4 8 9
8	6	8 9	3	2 4 X 7 9	5	2 4 X 7 8 9	1 2 4 5 9	1 2 5 7 9	4 9
9	7	8 9	4	1	5 9	2 X 8 9	2 5 9	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 sudokus that are not at the very beginners level without sets. The idea is rather simple:

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:

and for blocks:

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.

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:

Grid 1

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

Grid 2

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

And now some sudokus to practice sets:

Grid 1

	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

Grid 2

	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	

Puzzle 1

	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

Puzzle 2

	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	³₈1	¹ 5 6 ₈	¹ 3 5 6	¹ 5	¹²5₈	9	7	4	¹²5
2	⁴₇	¹5₇	2	3	¹4 5₇	¹4₇	6	8	9
3	9	✗✗₇₈	¹4 5	¹4 5	✗✗✗✗₇₈	6	3	¹²	¹²5
4	²³₇₈1	¹5 6₇₈	¹ 3 5 6	9	¹5 6₇	¹₇	4	¹²₆	¹²³₈
5	⁴₈	9	¹4 6	2	¹4 6	3	5	7	¹₈
6	²³₇1	¹5 6₇	¹4 5 6 3	¹4 5	¹4 5 6₇	8	9	¹²₆	¹²³
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	¹4	¹4	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	¹5₈₉	¹₈₉	✗2 4✗✗	²✗₇	²4✗₇✗	6	¹₈₉	3	¹5₈₉
2	³5 6₈₉	³ 6₈₉	4 5 6₈	5₉	³4₈	1	₆6₈₉	7	2
3	¹³5 6₈₉	7	¹²5 6₈	²³5₉	²₈	³₈₉	4	¹ 6₈	¹5 6₈₉
4	¹5 6₈₉	¹ 6₈₉	¹5 6₈	¹²6₉	¹²₆	4	7	¹²₆₈	3
5	¹³ 6₈₉	4	¹ 6₈	¹²³6₇9	¹²6₇	³₇9	5	¹²₆₈	¹ 6₈₉
6	2	¹ ³6₉	7	8	5	³₉1	₆6₉	4	¹ 6₉
7	4	5	3	¹ 6₈	¹ 6	2	¹ 6₈	9	7
8	7	2	¹ 6₈	4	9	5	3	¹ 6₈	¹ 6₈
9	¹ 6₈	¹ 6₈	9	¹ 6₇	3	₇₈	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

9 The X-wings configuration

Imagine the following situation:

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	6 7 9	2	5 6 8	5 6 8	3	1 9	1 6 7 9	7 8 9
2	1 6	1 6	8	9	2	7	3	5	4
3	5	6 7 9	3	4 6 8	4 6 8	1	2 9	2 6 7 9	2 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 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, is 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 sudokus 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 sudokus 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.

Let us have a good look at the four colored cells 4C, 4D, 6C, 6D. Three of them have as only possibilites 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.

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

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	²⁶	7	²⁶	8	5	1	4
2	7	4 8	4 8	5	1	9	2	3	6
3	5	²⁶	1	3	4	²⁶	9	7	8
4	3	1	²₅₆	8	²₅₆₇	²⁶	4 6 7	4 ²⁶	9
5	8	²⁶	9	4	²⁶₇	3	6 7	5	1
6	4	7	²₅₆	9	²₅₆	1	6 8	²⁶ 8	3
7	1	4 8	3	2	9	5	4 6 8	✗ 6 ✗	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.

The following sudoku is 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. Out of about 10 billion sudokus we found only two that were like this one, but the other involves techniques we have not discussed yet.

Sometimes we encounter an **incomplete pattern**. Have a look at the next position:

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

We see here almost the pattern for type 2A. In cell 6D however we miss the possibility for the number 9 (an XY-wing centered at cell 8G was responsible for it). This must have been eliminated at an earlier stage. Yet it is virtually still there because if we give cell 6D the number 7, then 6E and 1D must become 9 and hence all possible 9's in row 6, column D and block 5 (the center block) will be eliminated. But then putting a 9 in cell 6D would also lead to a solution and hence we can cancel the possible 7 in 6D. These incomplete patterns hold also for the types 1 and 2.

11 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 8	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 9	6 7 9	4
3	4	9	2 8	5	3	6 7	1	6 7 8	2 6 7
4	6 9	4 6 7	3	4 7 9	2	8	4 6 7 9	1	5
5	2 8 9	1	2 7 8 9	4 ✗9	6	5	4 ✗8 9	3	7 9
6	5 6 8 9	4 5 6 ✗8	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 ✗8	1 5 7 8 9	✗8 9	6 7 9	2	4 6 ✗9	4 6 7 9	3 6 9
9	2 9	2 7	4	7 6 9	1	3	7 6 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:

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

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

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 sudokus, but because its degree of difficulty is much higher than the swordfish it becomes rather frequent among the most difficult sudokus. Here is an example:

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.

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.

12 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 (3)	2	8	7	5 (3)
2	7	5	4 (3)	1	8	6	4 (3)	2	9
3	2	8	4 9 (3)	7	4 9 (3)	*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	4 (3)	4 (3)	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 sudokus:

	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		

13 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	3 7	2	7 8	8 9	1
5	8	7	2	5	1	9	4	3	6
6	1	6	3 9 7	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	3 5	6	2 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	5 3	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 3 8 9	6	1	2 8	2 ✗	5	7
9	1	7	2 3 8 9	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				

14   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 6 7	3 7	3 6
2	5	2	7	3	8	6	4	1	9
3	4	6	3	1 7	1 7 9	7 9	5	2	8
4	3 8	4 5	2	9	6	1 4 7 8	7 8	3 4 5 7	1 3 4 5
5	3 8	4 5 9	1	4 7	2	4 7 8	7 8 9	6	3 4 5
6	6	7	4 9	5	3	1 8	2 8	4 9	1 2
7	7	8	5	1 4	1 9	2 3	2 3 6 4 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 9	2 3 9	⨯ 5 ⨯ 3	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:

15 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:

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	6 78	1 78	1 6 78	3	9	2	1 7	5	4
2	4	1 7	2	5	8	6 7	1 7 9	3	6 7 9
3	9	3	5	4	6 7	1	8	2	6 7
4	2	789	6 78	6 7	4	3	7 9	1	5
5	3	5	1 7☒8	9	1 7	8	4	6	2
6	6 7	1 7 9	4	2	1 6 7	5	3	8	7 9
7	78	6	78	1	2	9	5	4	3
8	5	2	9	8	3	4	6	7	1
9	1	4	3	6 7	5	6 7	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

16 Almost Locked Candidatess

The almost locked candidates is a rather nice 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	3 5	5 7 9	4	3 5 7 9
3	4	5	7	2	1 3 9	8	1 3 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 6 8	7	1 ✗ 3	1 3 6 8	5 6	4
8	6	3 4	1	5 8	4	2	7 8 9	5 9	7 9
9	7	3 4	5 8	9	1 6	1 3 4 5	✗ ✗ 6 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	(8 6)	(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	(1 3 8)	(3 8)	9	6	4	2	5	(1 3)	7
7	(2 3 6 8)	(3 6 8 9)	(8 6)	4	(1 2 8)	5	7	(⨉2 3 ⨉ 9)	(1 6)
8	(2 3 6 8)	1	5	7	(2 8)	(6 9)	(2 6 9)	(4 2 3 ⨉ 9)	(4 3 ⨉)
9	7	(6 9)	4	3	(1 2)	(6 9)	(1 2 6 9)	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	(8 6)	(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	(1 3 8)	(3 8)	9	6	4	2	5	(1 3)	7
7	(2 3 ⨉ 8)	(3 6 8 9)	(8 6)	4	(1 2 8)	5	7	(2 3 9)	(1 6)
8	(2 3 ⨉ 8)	1	5	7	(2 8)	(6 9)	(2 6 9)	(2 3 9)	(4 3)
9	7	(6 9)	4	3	(1 2)	(6 9)	(1 2 6 9)	8	5

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

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

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

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:

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:

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

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:

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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:

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:

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Grid 1 (top):

	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	4 / 7 (²)	4 / 7 (²)	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.

Grid 2 (bottom):

	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	[4] (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	[4] (²)	3	6	8	5	9	4 / 7 (²)	4 / 7 (²)	1
8	1	[4] (²)	9	7	6	3	5	8	[4] (²)
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

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 sudokus 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 sudokus 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 Contradictions

Coloring techniques are rather powerful, but as it turns out one can obtain nearly the same results in a simpler way. Let us have a look at the next diagram:

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

There are a lot of cells in which there are only two possibilities. In this case many have the same two possibilities but that is unimportant for what we are studying here. Let us have a look at position 1D. Assume that this would have the value 5. We would get

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First puzzle grid:

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

The red positions would all have to obtain the value 5 as a direct logical consequence. The only techniques we have used here are that they are everytime the only 5 left in a row, column or block. But as a consequence the 5's in 1H and 2I are vetoed and hence there cannot be a 5 in the third block (right top). This cannot be and hence in position 1D there cannot be a 5.

Here is another example:

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

In the position 1E we try the 6. This eliminates the 6 in 1G and hence we get a 6 in 3I. This eliminates the 6's in 4I and 6I and hence 6G has to be a 6. This again eliminates the 6 in 6F and together with the fact that the original 1E eliminates the 6 in 4E the position 4D must be a 6. So together the 6's in 1E and 4D eliminate all 6's in block 8 (9E and 8D) and hence we have a contradiction. This is all relatively simple logic. We have taken the cases that there are two possible numbers in one block, row or column or in one cell as special. They are relatively easy. It becomes more complicated when a given number still has many possibilities as in

21 Some remarks

Some sudokus will allow shortcuts over the 'official' solution. The reason is that we cannot program everything and sometimes a combination of two methods will allow a much shorter road than given in the book. Let us have a look at an example. In one sudoku that was judged difficult enough to be in the book we encountered the following position:

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

We see here the almost locked candidate technique involving the highlighted cells. The thing is that when we have two such cells they are bound to have the same values in the end. This is the opposite as with remote pairs where the cells alternate values. The 'official solution' continues now with a swordfish configuration, a finned swordfish, a jellyfish and much more as in

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

but if we are smart we notice now a link between the cells 6F and 1G:

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

When the cell 6F has the value 2, 4D is 5, 7D is 2, 8G is 2 and 1G is 5. When the cell 6F has the value 5, 4D is 2, 7D is 5, 8G is 5 and 1G is 2. The result is that either 6F or 1G is 2 and the 2 in 1F can be scratched. After that not much is needed to solve the entire sudoku. This kind of extra human smartness is beyond the power of the computer. Of course we could have programmed this specific combination of methods, but then there are others that one only becomes aware of when one sees them in an actual situation.

22 Sudokus without coloring

1

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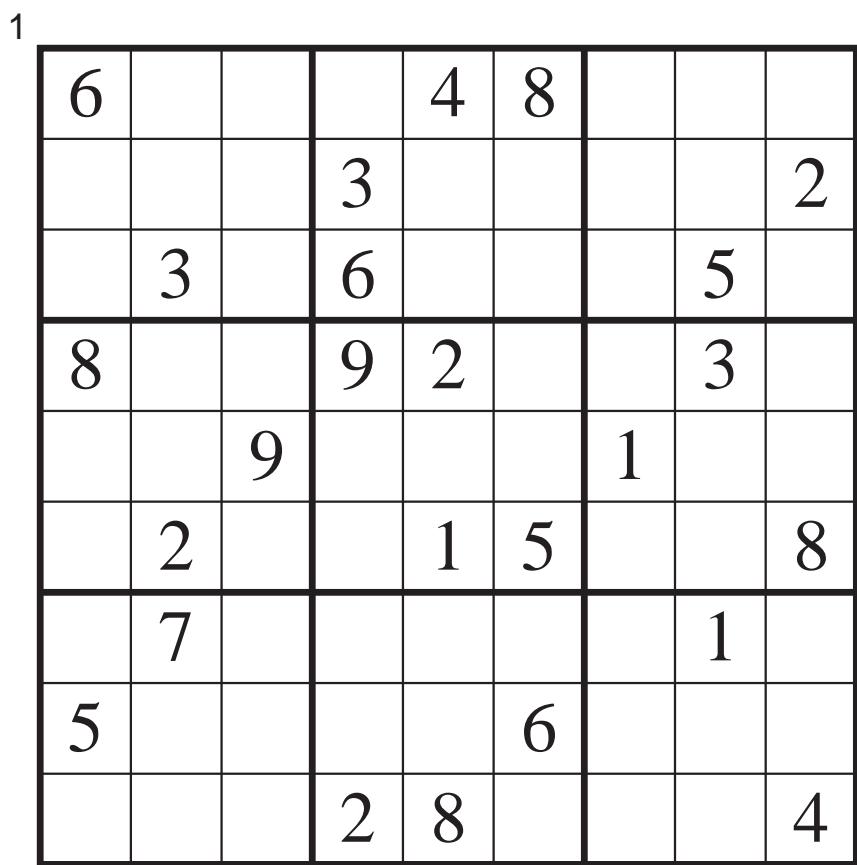
2

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

3

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

4

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

5

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

6

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

7

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

8

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

9

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

Puzzle 10:

					1			9
			2					
		8	3				4	6
	7	3						2
		5		1		6		
						3	7	
9	4				6			
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Puzzle 11:

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		9						

12

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6		9			3	8		
7						5		

13

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	8				7	5		
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		8		3				

14

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15

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				4	8			

18

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			2					8

19

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20

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21

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	6		3				4	
3			1	7			6	

24

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	9				2			3
4			6	3				

25

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	5			9				2

26

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27

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28

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29

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		8			1			

30

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31

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34

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	9			5			4	

36

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37

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			2		4			9

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		9					7	

42

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43

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	3					2		

44

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3					9			6
			5	1		7		

45

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6	4							9

Sudoku 46:

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Sudoku 47:

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	7	2				1		
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	9		5	6				2

48

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

49

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

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

52

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					6		9	

53

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		4			3	7		8
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							6	

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			1	2				6

58

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	5					7	4	

59

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60

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61

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66

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67

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68

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69

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70

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71

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72

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73

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74

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75

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76

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77

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78

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79

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81

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82

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86

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88

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93

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94

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95

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98

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99

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104

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105

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108

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109

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128

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140

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154

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155

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160

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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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177

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185

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23 Sudokus with coloring

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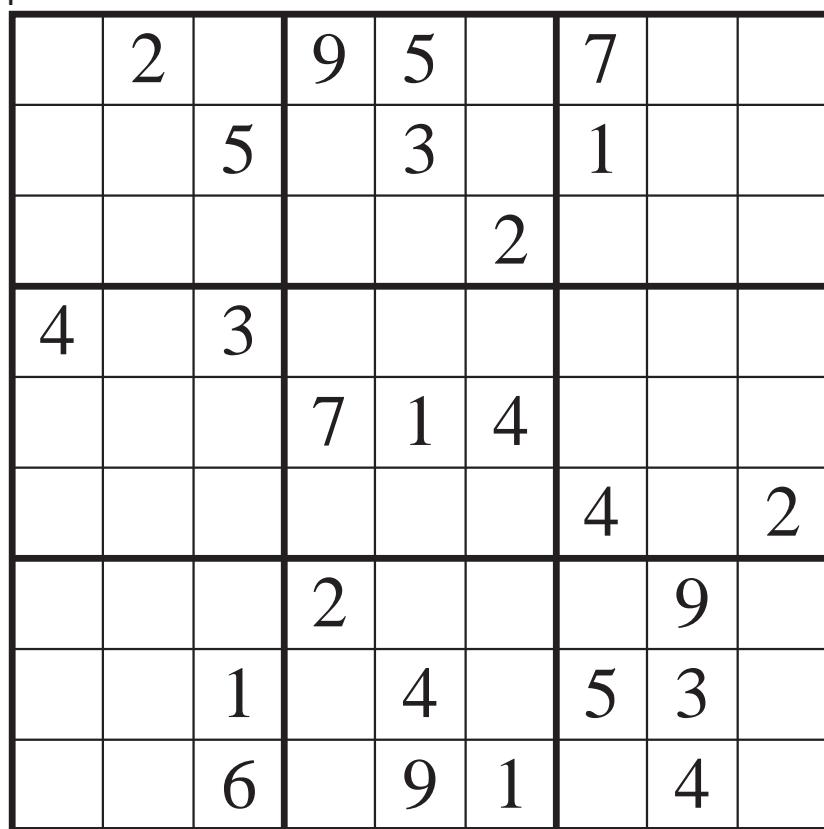
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278

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280

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

281

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

282

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

283

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

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

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

286

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

287

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

288

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

289

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

290

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

291

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

292

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

293

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

294

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

295

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

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

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

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

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

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

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

302

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

303

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

5		

Puzzle 304:

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

Puzzle 305:

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

306

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

307

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

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

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

310

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

311

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

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

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

314

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

315

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

316

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

317

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

318

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

319

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

320

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

321

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

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

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

324

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

325

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

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

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

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

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

330

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

331

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

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

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

334

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

335

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

219

336

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

337

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338

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

339

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

340

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

341

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

342

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

343

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

344

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

345

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

Puzzle 346:

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

Puzzle 347:

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

348

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

349

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

350

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

351

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

352

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

353

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

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

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

356

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

357

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

358

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

359

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

360

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

361

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

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

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

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

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

366

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

367

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

368

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

369

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

Sudoku 370

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

Sudoku 371

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

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

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

374

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

375

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

376

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

377

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

378

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

379

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

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

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

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

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

384

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

385

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

386

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

387

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

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

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

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

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

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

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

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

395

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

(Sudoku puzzle 396)

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

(Sudoku puzzle 397)

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

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

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

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

24 Solutions

It is traditional to publish solutions in the back of sudoku books. In the case of our sudokus 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 sudokus 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 suffiently complicated sudoku might need 10 pages or more to show all steps in the solution graphically. That means that with 2 sudokus per page we would need 20 times the space for the solutions. This would not leave much space for our sudokus.

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 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.

p 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.

q An XY-wings configuration. Followed by a digit and a letter indicating the coordinate of the center.

r Remote pairs. Followed by two digits which are the numbers in the pair.

s 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.

t Almost locked candidates. 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.

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.

25 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 sudokus 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)

Found a pointing veto (8)

Found a pointing veto (8)

Found a pointing veto (9)

Found veto pair (2)

Found a claiming veto (2)

Found veto pair (1)

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

Found a pointing veto (2)

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

Found an x-wings configuration(1)

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

Forced spectators out (hidden pair)

Forced spectators out (hidden triplet) (2)

Found a pointing veto (4)

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

Found veto triplet (1)

Invoked uniqueness(1)

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)

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)

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)

Found a finned x-wings configuration(6)

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

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)

Single: Adding 2 at position 3B
Single: Adding 2 at position 9F
Found a pointing veto (2)

Forced spectators out (hidden pair)

Grid 1

	A	B	C	D	E	F	G	H	I
1	3	4 7	7 ⁶	1	8	9	²⁶	5	²⁴ ✗
2	5	4 ⁹	8 9 ⁶	2	3	4 ⁶	7	1	8 ⁶
3	1	2	8 ⁶	4 ⁶	7	5	³⁸	4 ³	9
4	6	1	4	5	2	8	9	7	3
5	9	8	5	3	6	7	4	2	1
6	7 ²	3	7 ²	9	4	1	5 8	6	5 8
7	8	5	3	7	1	4 ⁶	²⁶	9	4 ² ✗
8	4 7 ²	7 9	7 9 ²	4 ⁶	5	3	1	8	7 ⁶
9	4 7	6	1	8	9	2	5 ³	4 ³	7 5

Applied coloring (6)

	A	B	C	D	E	F	G	H	I
1	3	4 7	✗ 7	1	8	9	²⁶	5	²⁴
2	5	4 ⁹	8 9 ⁶	2	3	4 ✗	7	1	8 ✗
3	1	2	✗ 8	4 ⁶	7	5	³⁸	4 ³	9
4	6	1	4	5	2	8	9	7	3
5	9	8	5	3	6	7	4	2	1
6	7 ²	3	7 ²	9	4	1	5 8	6	5 8
7	8	5	3	7	1	4 ⁶	2 ✗	9	4 ²
8	4 7 ²	7 9	7 9 ²	4 ✗	5	3	1	8	7 ⁶
9	4 7	6	1	8	9	2	5 ³	4 ³	7 5

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

26   The solutions

1: 3F2 1C2 5E6 5F3 5D8 5H2 7A2 8G2 9G5 **b5r4 b9r3 e73r8 g3b pFAc1 u926r6 a76 cHc** 6G9 8H8 3G8 2B8 7C8 **a34 a74 pHBc9 a79 b1r9 s2Er oFGHc7 a27 b1r7** 3I1 **d4r eFAc1 f8b s7Ir** 8E3 **a89 t1B4CC fCc** a47 **c2r q4C** 8C4 3A4 2A9 1B1 2C5 3C7 2F1 1D5 2E7 3E9 4C1 5B4 4B5 6C6 6A3 5A7 5I5 4I6 4G7 1H7 1I9 1G3 6D7 4F4 6H4 2G4 2H6 9A1 9C3 9B6 8B9 8D1 7D4 7E5 9F7 7F9 7I3 7G6 8I7 9H9

   2: 1A6 2D9 3G8 3H9 6C9 4G4 4I9 8G9 3F2 3E4 4D2 5A2 6D8 9F4 7B4 6A4 9D5 7D7 **a13 a25 b3r1 p24r1 p57r6** 9B6 8F6 **u618r3 v2467r1** 8I8 4B8 **o247r3 t4A6FR cHc e76r1 q4A** 5E6 **dIc q7H** 6H7 4F7 5B7 3A7 3B1 6B5 4A3 2C3 2A8 6E1 6F3 1D3 2F1 1F5 1G1 2H5 1I7 1H2 4E5 4H1 5I5 6I6 9A1 8B3 9C8 7C2 8D1 7E3 7I1 9I2 7H6 9G7

3: 2H1 3F1 5D1 8B1 9D3 **a14 bIc5 fEc p69r2 p28r7** 9I2 5H2 6B2 4B5 6E5 4E7 **eHBc7 gAc** 7C3 **b6r3** 4G9 **c4r c6r p41r6 s5Er dFc q8C** 7A2 7I5 **a96 t1F3BR u746r4 oCDHc4 s7Dr** 8D8 **q2D** 1F4 3B4 **bIc6 h36** 4A3 5B6 1A6 5F3 4F6 1H8 2I7 1B7 6G7 6I3 3G3 3I6 5I8 4C8 3A8 2C9 2A5 2E8 2F2 2D6 3E9 6C4 5A9 5E4 6D9 4H4 8C5 8A7 9B9 8E2 7D4 7E6 8F9 8I4 8G6 9H7 7H9

4: 2B6 2E1 2D9 9B4 7G9 9F9 5E9 5F6 7H8 8H6 7E6 8I1 **a38 a82 b5r4 cFc cAc t5A6HR a62 uCEFc3 v1579r3 s2Ir pIAc7 t1H2Ar b3r2 bIc2 f4r o348r7 s4Br dCc b3r3** 1D7 4E7 5A7 4B1 1A1 2A2 1H2 6F1 4F4 6C4 5B3 2C3 3B5 3C7 1B8 1I3 3I8 4C5 6E3 3F3 3E2 5H1 5G4 2H4 2I7 2G5 5I5 6D5 4D2 5D8 6G2 6H7 4G8 8B7 8C8 8F2 7D3 9A3 7A5 8E5 9I2 8G3 9H5

5: 1G7 3G4 4I6 **a32 c6r eFAc4 f2r b2r8 o367r3 u169r6 u369r6 a16 cFc** 6E2 7D2 9G2 2D3 3E8 **a55 pEBc7 q1H** 2I8 8G8 5H8 4G1 **a99 c8r dAc** 6A5 **h252** 2H2 3F2 2F5 7G9 6H9 6G3 9I3 3H3 1A3 1C8 4B8 7B3 9A8 **t5D9Fc s5Ar** 8B9 **c4b eEBc7 t6F9EC b9r5 q4D** 5F1 8D1 7E5 4D5 4E4 1D4 1E6 5A4 4C9 2A9 2C7 5B7 6C6 3B6 3C5 5D6 6F7 5E9 7C4 9C1 9B5 8A7 8F4 9F6 9E7 7H1 1I1 1H5 8I5

6: 1A1 1F5 5B7 7E3 3I1 9I9 **a45 bIc9 d4r** 6G1 4G9 6B9 **a63** 6F3 6H2 2A3 7A9 **gCc** 8G4 **oABFc8 a98 q3F r08 t6E3FC uDAHc4** 9F2 5D2 **a56** 4H4 **p71r2 a32 cGc f1r s1Hr c2r s1Dr eGEc7** 3C2 8B2 8C3 4B3 4C5 9B5 9C6 9A8 6C8 3B8 1E8 5A4 6E4 3F4 5F8 7C4 9D4 9E1 4D1 4E6 1D6 2D9 1C9 2C7 3E7 3G6 1H7 7D7 7G2 1I2 1G3 5I3 5H6 5G5 2H5 2G8 8I6 9G7 7H8

7: 1D5 2B5 7A3 5H8 **cBc** 5C9 7C2 4A2 **d2r p28r2 p27r9 u536r3** 4H3 6B3 6C8 9B8 8D8 5B1 **a87 cCc f9r h45 f8r p76r1** 4D1 **c6r eICc7** 8H7 8A9 9A1 **e82r2** 9E6 **r08 o147r6 s3Gr cIc h89** 2F8 3I8 2I9 **c2b b1r4 cFc q1H** 1C7 3A6 2A4 3F4 2E2 1H2 3B2 1B9 3D9 1E3 1F1 3G3 1I6 1G4 2G7 4C6 6A7 5D3 5E4 5F7 6F6 5G6 4I7 8E1 9F2 9D7 7F9 7I1 6G1 6I5 8G2 8I4 9C4 8C5 9G5 7H6 9H9

8: 2I1 3H5 4F1 5E5 8A1 7C5 8B8 7F2 7I9 8G6 **a12** 5H2 **c1r** 3A8 1A2 2B9 3G2 1G9 6F8 4I8 2H8 1E8 5I6 1I7 9E7 **a97 q2E** 8C7 7H7 **pHEc3 r28 r28 o268r4 a64 t5F4BR p24r6 v3579r3 pDAc3 a73 q5D e74r4 s4Dr** 6G7 6H4 4G3 3I3 2C3 3B6 2E6 3F4 3D7 2G4 5B3 4B7 5A4 6A9 6E3 4E2 6C2 4C6 4D4 6D6 5F7 5D9 7B4 7A6 9A3 7D3 8E4 8H3 9I4

9: 2D3 2H5 1H4 7F6 9G3 5I3 7A1 7C3 1B3 4A3 **a37 b4r6** 9A6 **e94r9 d5r** 5A8 **f6r** 6H7 **bIc8 t9C6AC u479r2 uGADc2 v4579r2** 3D2 **a82 p39r4 o268r4** 5F2 4F7 **q2F** 2A7 3B4 1C6 2F4 1E8 3E7 1G7 1I2 4B6 6B1 5C5 6A4 4C2 4E1 5E4 6E5 5D9 6D6 6G2 5G6 3I6 3G1 6I8 2G8 2I9 4H9 8A2 9C4 8B5 8C7 9B8 8D4 8F8 9E9 7E2 8I1 9H2 7H8 8G9

10: 1H2 5F3 5D7 9B5 6F2 **a33 a61 a71 a73 a78 a87 bIc2 dCc bIc6 fEc** 9E3 **cIc** 6I5 **dHc** 4H1 **a38** 7D8 9D1 7C1 8C2 9C6 7E2 8E7 8H6 **a68 d4b pGDc9 e84r9 pCEc9 q4F** 4A6 **a48 r48** 4F8 **p84r4** 6D6 **dEc a29 bIc4 u259r4 oAFIc4 t2F1CR** 7I7 7H3 2I3 7G5 2H5 **q2A** 3B2 5A2 6C4 2A4 1D4 3E5 1A5 1B3 2B6 3A1 2C9 1C7 1E6 2E8 3F9 2F7 2G1 3G7 1G8 6B1 6A8 5B9 4E4 4D5 6E9 5I4 5H8 4G9 8A3 8B8 9F4 8D9 8G4 9I8 9H9

11: 1B9 8G9 2H9 1H4 1I5 4I9 6E9 1C7 2G1 **a24 a32 dGc a95 c7r f9r a78 cBc cAc a11 c1r p38r6 u917r6 e83r6** 5F6 **o578r7 s8Cr** 5B3 **d7b r28** 8D5 9H5 8B7 **h58 t6D4Cr** 6C2 **q2C q5H** 5C5 6A1 4C4 3B4 3C1 1A6 2C3 1D3 2E4 3E6 2F8 6B8 6D4 4E5 4F3 5E1 1F1 1E2 6F7 4D8 4H1 4G2 3I2 3G7 6G5 5H7 9B1 7A3 9A4 7B5 8C6 7C8 9F2 9D6 7E7 9E8 8E3 7H2 9G3 7G6 9I7

12: 1H8 5A1 4G1 3H1 6G4 2A4 8H7 7E7 8I2 **a35 a93 cGc c1b f1r** 3E3 **cEc h15** 8D4 3F4 **p42r6** 3I9 **a36 e42r9 pGDc9 q6H s9Cr t5G4ER oEHIc6 q2E u945r8** 7A8 **r38** 6E8 9F8 **a52 a89** 5D2 3G2 1G7 3C7 1C6 1B3 3D6 5B7 7C3 **p29r2** 7F2 2E2 1A2 2B9 1F9 6C2 5C5 4C8 4B4 6A9 4E9 5F6 6H5 2I5 2H6 4I6 5I8 5H3 5G9 9B2 8B1 9C4 7B5 9D1 1E1

1D5 8E5 9E6 7D9 9I3 7G6 9H9

13: 1A7 3E2 2H8 5A8 9D7 5E7 6I7 7I8 8E6 9I6 9H5 **e43r6 o267r5 u269r1 t1F8Dc b2r9** 5C9 6G9 **a99** 8D4 1F4 **a94 uAFGc2 pGBc2 a72 s4Cr v2679r1** 1B3 7A3 5G3 9G2 8B2 7G4 **cHc h39** 3H3 1I9 3D9 2F6 3A6 3C4 3I1 5B6 4A4 6A2 5F2 4D6 4I2 5H4 4H1 6B1 4C5 2B5 2A9 1C1 2E1 1D5 5D1 6F5 5I5 9A1 9B4 7B9 7F1 7E5 9F9 8I3 8H9

14: 3B4 3D9 3H3 3G2 5D6 4D3 5G4 5H7 9A3 1C3 2C7 2A6 2B9 5B3 5C1 8D4 7H2 8G7 6D7 9D8 **a75 c1r q8H uEBCc5 pHFc5 oBCEc5 t8A7Gr cGc uEBCc8 v1258r8** 4H5 **fFc r38** 4G8 4I9 5I2 6A2 6C9 4F2 4E1 8A9 7F1 8B1 8C5 1A5 3C8 2F8 3E5 2G5 2H1 1I8 6B5 5A8 5F5 6E8 6F4 1E4 1F7 7C6 7B8 9E6 7E7 9G1 9I5 8I6 8H8 7G9

15: 1A8 6B6 4E1 9B5 9C8 9I4 1G4 7D6 **a11 a25** 6D5 **a89 a91 c6r a62 d2b a27 g2r b2r3 uFCGc2 v1689r2 bIc2 c9r c8b d5r h29 f8r cBc oBDFc7 p91r3 q1E** 6E7 5B7 5A1 4C4 6A2 5D4 8B2 2C2 2B1 2A3 1B9 3G2 1E2 3H1 3I8 2G9 4H9 6F9 5F8 4F2 4D3 3F3 3D7 5I2 5H5 4I6 6G8 7C1 7B3 7A4 8A7 9A9 9D2 9E3 7F7 8D9 8G1 9H7 2I7 1I5 2F5 1F6 1H3 2H6 8I3 8H8

16: 1G1 6I4 8F6 9D8 2A4 4B4 **a53 dAc a78** 6G8 **dIc o258r9 p69r2 pGCc2** 7A2 7B1 4A1 6E1 3I2 1D2 7I8 **b7r7 d9b a97 q3A a79** 7H9 2G9 **a95 a75 cFc i57** 4E3 **u624r6** 5E6 **s5Cr u167r7 v1679r7 q3E** 3B6 1B9 2D6 2I5 8G5 8I7 2C3 5C5 5A9 6B7 4D7 1E7 3A7 1C8 1F4 3F3 3E9 3D5 1H3 3H8 6F5 4H5 6H6 4C6 6C2 4G2 5G7 5I3 9B5 9C7 8A8 8C9 9E4 7E5 7F7 9F9 9H2 9G3

17: 8E9 **a33 a13 a35 a74 a85 d4b b4r8 mGc** 4H8 **g7r b7r1** 8D7 **pAIc5 v2368r5 c9r dBc a12 f1r** 3F9 1A9 3D1 6C9 7F1 7E5 **a24 a82 a86 dCc d6b a62 c9r h263** 1F2 2C2 1C6 2E6 5C1 4B7 5B2 4I2 5G7 5H9 4G6 5F6 4F5 9B1 9C7 7G2 9D2 7D6 9H6 9G9 2F4 **o126r8 q3C** 1B4 3G4 2G5 1G8 1H1 1I3 8G1 7H3 9A3 8C5 3B5 2B3 3C8 3E3 2D8 5A5 6B8 5D3 6D4 5E8 5I4 6H5 7C4 7A8 8H4 9I5

18: 1B5 3G5 5G3 7A3 3I3 3C9 6A9 9B9 6I1 4I2 **d4r** 9F6 7C6 8C2 7G2 **o348r4 p49r7 s2Gr s8Dr a88 t4B9Cc c9r** 9H3 8E3 **e94r7 u516r8 v1356r8 s2Er p42r6** 1G1 8H1 7D1 9C1 4B1 6C4 5F1 4F4 2D4 3H4 4E7 5C7 2B7 1C8 3F8 1I7 2G8 2I9 4A8 6H8 5E8 5D9 1E9 2E2 1D6 1H2 2H6 6E6 6D5 4G6 8B4 9A7 8A5 7B8 9E5 8F7 8D8 9G4

19: 9F3 6I3 4D3 4E2 4F6 8D2 9G2 4H9 9E8 **a68** 5D8 **b4r1 b4r4 e93r6 q1B q7I t1C3Hr p36r4** 5I4 6H1 6G8 **u617r5 s5Fr w6E7** 5E1 2F1 6F9 2C8 **c3r c7r o167r5 p58r7 eFAc7 mBc q1C q7C** 4C4 **bIc1 c8r a94** 2H7 **q2D** 3E9 2D4 1D6 3B6 3A1 1C3 1E7 3H3 3G4 2I6 2G9 1B9 2A5 2B2 1H5 4B1 6B5 5A7 4A8 6E4 5F5 6D7 7A2 8A3 7C6 8C1 7B7 8B8 9B4 7E5 8F7 7I1 8H4 8G5 9H6 7H8 8I9

20: 2E7 3C7 3B9 5B8 5A5 6D8 2F8 5H7 5G9 8A7 8D9 9C9 8I8 **a14 a81 b3r3 dBc e83r5** 9B5 7B6 **f3b a34 p86r2 u167r1 v3589r3 a23 q3F** 8E3 7A3 7C1 8C2 5C3 6C4 4G3 9E1 **a64 a86 c2r eHAc1 o267r2 p35r2 a52 q1E** 1B3 2A2 1A4 2B1 2D3 1H1 3I2 1E2 1D6 3F5 3H3 2G4 1G5 2I6 6A1 4B2 5F2 4F1 5D4 5E6 5I1 6H2 4I4 9F4 7D5 8F6 7G2 9I3 7H4 8H5 9H6

21: 2C8 3G5 2H6 1A6 1B5 9H8 4E5 9D5 **a37 a71 b7r4 bIc9 c5b** 6E8 1F8 5G8 **d2r** 2I7 **a22 fEc h14** 7E4 2D4 2E1 7F1 6D1 4F2 **p19r3 s6Ar uHAGc9 v1349r9** 9F9 **e91r3** 5H3 6H5 **bIc9 cAc** 9A4 5B4 8I4 **oABGc2 q1E** 8E6 1E7 3F3 2B3 2A2 3B9 3D6 3E2 1D9 1I3 2G9 5C2 5A5 4B1 6A9 5F6 5D7 5I1 6G2 4I9 8A1 8B2 8C5 7C9 7D2 9E3 8F7 9I2 8G3 7H7 8H9

22: 2I6 6E9 8B5 **a27 a28** 2B1 6G1 3H1 **a62 a65 cHc a33** 1E7 1B8 3E2 **g4r o349r7 pHCc3 pBDc6 s4Ar a43 c4b u826r3 v1268r3 c5r** 5D4 7E4 7C3 **a79 eECc6 h13** 5E1 4A1 5A3 4H3 4C7 3A7 2A4 2C2 1C9 3C5 3I4 1G5 1I3 3G8 2H9 6B6 4E6 9C6 7B7 8G3 9E3 8H4 7G6 8D6 8F7 6D7 6F3 2D3 2F8 4D8 4F2 5F5 6I2 4I5 5I7 7D2 9G2 8A2 7A9 9A8 9H7

7I8 8I9

23: 1D9 2D7 8A5 9F5 9C4 3C3 7G3 3G4 2G5 3E5 5H5 1G6 3D6 7E6 4H3 6B3 6H8 5D8 8E8 9G8 **a89 a97 o469r9 uADEc2 uADHc2 t9B5Cc** 4A6 2C6 5I6 **a41 pHAc1** 1C7 **a11 q5C** 6A7 7B7 7A8 3B8 2I8 **a42 c4r r58 v3589r2 q7C** 9B2 5C2 4B9 5B1 4E1 3F1 2E2 1A2 2A1 1H1 3I2 6D2 4F4 5F7 6E9 6I4 4I7 5G9 8F2 7D4 7F9 8C9 7C1 8I1 7H2 8G7 9I9

24: 3A9 1D3 5D2 4I2 7D9 **a15 a35** 9H5 9G9 5H9 9C2 **a76 dIc fGc** 3E2 **p92r1 u439r7 uBFIc8 v2349r7 fEc b4r1 d5b dFc o249r1 d1r** 3I8 **pFCc4 t1A4Cc a44 c2r h35** 2B5 3C3 2G3 3G5 7A3 5B3 4B4 4C1 1A1 2C7 1C4 1B8 3B6 2F4 1E6 3F7 2E9 2I1 6D4 5F6 4E7 4F9 6G6 9B1 8A5 7E5 8E4 8D7 9F8 7I6 8C6 7C8 7G4 5I4 7H2 1G2 1H7 5G7 6A7 5A8 6E8 5E1 6H1 8G1 9I7 8H8

25: 3G1 4F1 7I5 8I1 6D9 3A9 1F9 7E8 **a23 a56 a57 a83 bIc7 d3r a32 b3r6 p35r4 eHBc4 g5r** 4G5 4H2 2G2 2B3 1D3 2D8 9G7 **pBHc8 a98 c9b s8Cr t5B9Ac u918r6 uABHc6 v1389r6 mCc a72 c8r a86 q4A** 4I7 5G8 1I8 3H4 1C4 2A6 2C5 3B7 1G6 2H7 6A5 5B4 6B6 6C7 5C2 4C3 4A8 6E2 5E3 5F5 3E5 4E6 5D7 6I4 5H9 9A4 8C6 8B8 7B2 7C9 9C1 7D1 8F2 3D2 3F6 9F3 9D6 7F7 8H3 7H6 9H8 8G9

26: 3C5 2C9 3E9 6C4 6F1 5E5 1D5 4F9 5G9 8H9 7H5 8F5 5C1 1E2 **a52 a57 c6r f2r a17** 1H8 6I8 6H3 2D8 **e92r4 h27** 4G6 **p71r4 t8D7AR** 7C8 **c4r r18 u825r2 oABIc2 q1G s7Ir d7r a96 h37** 7I3 9E3 7E7 **q3I** 1G4 3B4 3A8 1A1 1B7 2F4 3D6 3I1 4B8 4A3 2B3 2A2 8D4 7A4 7F6 9F2 8B2 4C2 5A7 5B6 6D2 4D7 5I2 6G7 8A6 9C7 8G1 7G2 9I4 9H6 2I6 2H7 8I7

27: 2B7 6H2 6F1 8D1 9B1 9H7 **e81r8 b3r8 d2r** 9I5 6C5 9C3 **a39 b2r5 b2r6** 1D2 **d3b f4r a54 p61r6 pCIc6 t6E7Dc v1368r6 c7b f7r bIc9 s3Br q2C** 8B5 **bIc6 q1A c9b o368r3** 4G7 **q3B** 8G9 3H9 7H3 6G3 6A6 5A7 6E7 7C6 8A8 2C8 1B4 3B6 3A2 1A5 2H4 2I1 3G5 1G6 1H8 4C4 5H1 7B2 9A9 9F2 4E2 4F8 3E8 3F3 8E3 8F4 5E4 5D5 2E5 2F9 2D6 4D3 5B3 4B9 5F6 4I6 5I9 7D7 7E9 8H6 7I8

28: 3B5 3G3 2I4 3A4 5G4 8F4 4E4 7H5 3F8 **a46 a61 a78 a96 b4r2 c2b** 1F5 **cFc** 9E7 9D5 5E5 **b6r3 p82r1 p26r7 r08 u258r2 c1b c2r** 2B7 **b6r7 e82r1 f6r g5r a49 eECc9 o258r2 fAc b8r9 t8A9Gr q7D** 7C9 1A9 3C6 2F6 3E9 1H6 1I7 1G8 2H9 5A6 6H7 6I3 9F9 8H3 7D3 7E6 6D6 5D8 6E2 2D2 1C2 2A1 1E1 4B2 5I2 4H8 6B8 5B9 4C1 5C7 4A3 5F3 4F7 5H1 6G9 9B1 8A2 9C3 9A8 8D1 7G1 9G2 9I6 7I8 8I9

29: 2A2 1A8 5A1 6D2 3E2 9B2 8E8 2F8 9E5 **a14 a46 bIc6 f1r a37 fHc h56** 5H6 1I6 1H5 5B5 7C5 8C1 7G1 2I1 9G6 8D6 7A6 4C6 **a79 a94 q9D q1B** 7F4 **s2Er** 1C4 **e71r3 b2r3 cEc q4D s6Gr t4D6AR** 4F5 6I5 **u259r4 u346r4 o259r4 s6Gr pCGc9** 3H7 3I8 4G8 **p48r3 u489r7** 6F7 1E7 3D3 1B3 3C9 2E4 1F9 3G4 4B9 4A7 6C3 6A4 4D4 5E9 4I3 5I4 6G9 2H9 2G3 7B7 7E3 9D7 9H4 8H3 9A3 8A9 8I7 9I9

30: 1H8 5E6 5D3 7C6 2C2 **a14 a55 a77 a94 cGc** 4G5 1I5 6C5 5F5 9H5 7E5 7F4 3E4 9G4 1C4 **cFc e76r8** 2E8 **p28r1 r28 eGDc9 p75r9 s3Ir bIc9 c5r s6Ar d6r u734r1 oAHIc1 dBc t7B9Fr o167r2 d3r q7A** 3A3 1B1 2D1 3F9 1D2 1E7 3H1 3I2 1G3 3G6 2G9 4I1 6G2 5A2 6H6 5H4 6B4 5I7 4H9 5B9 7A1 7B2 8C8 6A8 4B7 4C3 6D7 4F8 9B3 9A7 9C9 9F2 8E3 9E1 8F7 7D8 8D9 8G1 7I9

31: 7C5 9E6 7I2 8E2 6D2 4A2 1C2 4B3 3A3 9I3 7E3 2D3 8G5 4I8 **a46 a47 a89 a91 c4b eIFc4** 3B4 9A4 **p59r9 t5E1Fc uHCDc8 v2359r9 a99 c7r d6b e53r1 c2b oAEFc8 q1F d3r** 1B6 6C6 6B7 9C7 8A8 2C8 8B1 7B9 7F7 4E7 3D7 1E8 1G7 6E5 6F8 5E4 1F4 3E1 1A1 3C9 2E9 2H4 1I9 5C1 6A9 4F1 6H1 6I4 4H5 4G6 3H6 3G8 5G9 9D8 8F9 9G1 7G4 7H8 9H9

32: 3B5 2I7 1I9 4D5 5G2 9F5 8D7 7I5 **a24 a31 a33** 1E3 **a36 a76 dIc a94 d9r b9r1 gAc s5Fr p63r8 s7Er q3E** 9E1 6F1 **a54 eECc2 t6A4Gr p58r9 s5Cr a46 dCc q4I** 4G7

6A7 7H7 9H4 9A6 **a69 u736r8 a78 cAc oACEc8 q7E** 2F6 1B6 5C6 4A3 2C3 4B9 2A9 6C4 3A4 5B8 3C8 1A2 2B1 1D1 3E2 1F4 2D8 5D4 6E8 5F9 5H3 3I3 4I4 6H9 6I6 8A1 7C2 7B4 7A8 9D2 8F8 7E9 7G1 3H1 3G6 8I2 8H6 9I8 8G9

33: 3D6 3G2 5F7 4H9 7F2 9G4 7E4 1F4 1A7 1E1 2H1 2C3 9C2 8I2 5C9 7C6 1B6 8H6 7B7 9H7 1H3 **a71 a79 a88 r38 s6Br t5B4Dr** 5A1 **cBc pBFc8 u614r5 s5Ir v1246r8** 5G3 9I3 8D3 8G1 9B1 8B9 **cIc o146r5 q4D** 4C8 2B8 2A2 3A9 3B4 1C5 3E8 2F9 3H5 1G8 6B2 4A4 5B5 6A6 5D4 6F8 4F1 6D9 4D5 6I1 6G5 4I6 5I8 9D8 9E9 7I5 7H8

34: 4C8 7B8 1B6 9D4 **a29 cDc** 1D7 **f8r h25** 8G2 7D2 8D5 7I5 **p48r3 pIEc8 a88 s6Fr fFc pFGc3 a93 t3B2GR a31 c2r** 2F9 3C9 **q2I uACFc4 pBGc4 a34 d3r o236r4** 4E3 9F3 7G3 6I3 6F6 **cCc c4b p38r7 a77 c8r dAc c1r h68 q5I** 5D1 4D9 **p47r1** 9A6 8E6 9E8 7H6 8H8 1I8 3F8 1E2 3A2 2C7 2B3 1C1 3B4 1A5 2E5 1F4 2I1 2G4 3G5 3H7 5A3 4A4 6B1 5B5 5F2 6E4 5E7 4H1 5H4 6G7 5I9 7A1 8C3 7C4 8A7 9G1 9I7 9H9

35: 1C9 9G7 7I9 4B7 7C7 4H3 **a25 a55** 8I5 **a98** 2B8 2H2 **eHBc1** 7E1 **a88 dEc cEc d2b o248r4** 6A4 8C4 2A5 **q8E t4C6Gr uIDFc6 v2468r6 c6b c7b gGc q9I** 3I6 2G4 5I4 4E4 **h56** 4C5 6B6 5A1 5C8 6C2 5E2 6E9 6H1 6G5 4G6 5G9 3H9 8B1 9A6 2C6 7A8 9C3 8E6 7D3 2E3 7F4 1D4 1F6 5D6 5F5 3D5 3F2 9D2 9F8 9I1 1G1 3G8 1E8 3E7 1A7 3A3 1I3 8G3 8H8

36: 5C2 5E8 **a41 a44 a57 a65 a82 cAc c6r c1b** 1B8 3G8 9H8 7C8 9C1 2A1 1H1 8I1 3C3 2I3 7I2 8F2 3I5 5G5 **a14 a17 a79 a94 bIc7 dDc q2H u417r9 s4Fr p47r6 i35 dFc u729r6 v2479r6** 5F1 4B1 5B4 4I4 5I7 4D7 **o147r9 q2B** 8B5 8C9 6A9 2B9 3A6 2E6 2D5 1D2 1F4 2C4 1C7 1E3 3D9 2G2 2H7 1G9 6C6 6F5 6D3 4F9 5D6 4G6 5H9 9B6 9F3 9D4 9E5 7F6 7E9 8E7 7A7 8A4 8G3 7G4 8H6 9G7

37: 3A4 2F5 3I1 3F8 5E8 3H2 6B4 5B3 **a27 a84 bIc6 c1b** 2G7 **p19r6 q6E** 6I9 8H9 8G5 **a62 f4r gCc h56** 4D6 6D5 5C5 4H5 5H6 **pCEc1 s7Dr t6E7Fc eECc1 u924r3 q8I a73 d8b oEFIc3 s9Ir** 7B6 2B8 2A9 9C9 7D9 5F9 9F3 4E3 5D4 8E4 7F1 6E1 4A1 6C7 1A7 3C3 1D3 2E2 1C2 2C6 3D7 2I3 1G6 6F2 4F7 5G1 8C1 8A3 7A8 8D2 7G3 7I2 4G2 4I4 9G4 9I6 8I8

38: 2B1 3C2 2C4 1F5 2A5 3A6 1A8 2G6 5E4 9B4 9C5 9D8 6E8 8I1 5B8 **a27 a51 pAEc7 t4E5CR t8H7CR u726r3 w3H7 v1269r7 g7r a92 fGc o267r3 p58r7** 7E7 6F7 5H7 5G1 6I9 4E9 5C9 4H3 2I3 3E3 1G7 2D7 1H2 3H1 1D1 3G8 6B3 4C6 4A7 4F1 6D6 4D2 6G2 8A3 7B6 8C7 7C8 7D3 8E5 8F6 8D4 3F4 3D9 7F9 9F2 7I2 7G5 9I7 8H8 8G9

39: 5F9 9E5 4D5 6G5 7F3 9G7 8D6 **a64 a81 a88** 8H2 8B7 **a17 cFc d2r** 2D4 **fAc** 2B5 3H5 7A5 **h49 c1b d3r p37r6 pHBc6 bIc6 u146r3** 3D3 5D8 **l18 p36r8 t3I9Hc a91 e91r6 s7Cr s4Cr d6r a68 dCc q4C** 5A7 4E7 **a41 h34** 6I4 5E4 6E3 **q4G** 7G1 4G8 2G2 3G9 2C9 1C7 3A4 1G4 2I7 8C4 8A9 **r28** 7B2 6C2 6A8 4A6 4C1 5B3 4F2 6F6 5I2 5H1 1I1 2F1 1E8 3C8 1B6 1H3 3I6 2H8 4I3 9A1 9C3 7C6 9B8 8E1 8F8 9H6 7I8

40: 1A2 3I6 4C6 6F5 7B6 9E6 1F6 7G4 5I9 2G9 7C9 1E3 **a22 a54 cIc d3r oAFHc1 p93r1** 1G1 4H1 1C7 2F1 2E2 4F2 9D1 8A1 5A4 6E4 **a28 b9r7 h48** 3B1 6C1 **t6I3Gc uFBIc3 a83** 5B3 **v2369r8 p58r8 a88 q7F** 6G8 4A8 6B7 5F8 4D7 6D3 4E9 6I2 4G3 3H3 3G2 5H7 2I7 2H5 7A7 9C8 2B8 3C4 2D4 3D8 8B4 8C5 8F7 7F3 8E8 8D9 8H2 8I3 9I5 9G7 7H8

41: 1C8 4B9 6D5 4F8 4I3 **a36** 4G6 **a54 a57 a98 fAc** 5B6 **a47 c7r q4H** 4E7 6E4 5A4 6A8 4H4 1I4 5H8 4C2 **pHCc1** 6B3 **a41 j12 u318r5 pCHc5 o138r5 t2H3AR** 7G9 9G8 7D8 7A6 8A7 7F7 6G2 6C7 5C1 6H1 **b8r1 d8r e83r3 f9r m2b** 3H6 **q2G** 2H9 3A9 **q8D** 1D6 9E6 8D3 2E3 3C3 2B5 2A2 2F1 2D4 3D7 1H5 3F5 1F2 1E9 3I2 2G7 5I7 5G5 7B2 9B1 9A3 8C5 8E1 9D2 9F4 8F9 7I1 8H2 9I5

42: 2D4 5B6 4B8 8B4 7I4 8G6 2H6 3A6 2A8 3F8 7G2 **a99 p16r9 eHAc9** 6G3 5C3 8A3

1I3 **e61r2 dHc a31 p17r1 q1A t5G4FR q4I** 9I9 **c8r cCc** 4H1 **a41 r48 uEDGc5 a25** 7E1 8C1 9B2 3C2 **a77 cEc h29 oAFHc7 s5Fr** 4I5 2G5 3E5 2E3 3B3 1H9 2C9 2B7 1A1 2F1 1D2 3I1 2I2 6B1 4C7 6A9 5D1 5E2 5F5 6D7 4F9 6H2 5H7 5I8 5G9 8F2 7D5 9A5 7A7 9F7 8D8 8E9 8I7 7H8

43: 6A3 5C9 5E5 2F5 3G5 4I6 4E7 5H2 9H8 **a29 a42 fDc a86 i47 pFAc8 s8Hr uADHc4 a14 cAc** 2B6 3D6 **v3489r1** 6E2 7F2 **b3r2** 2A8 1A4 3H4 **c1r c2r c9b cIc** 2G9 **e51r1 f9r** 8C1 **o289r7 p71r3** 3C3 3A2 1B1 2C7 2I1 3E1 1I2 2D2 2H3 1G7 4A1 4C2 5B8 6D1 4F8 1D8 5G1 6I7 6G8 7B7 7C8 9C4 9F1 8D4 9D7 7I3 8F3 1E3 1F9 9E9 7E6 7G4 8G6 9A6 8A5 9I5 8H7 8I9

44: 3I4 1I9 5C3 4G3 5G6 8B1 9H3 7F3 1G1 5I7 4I5 **a56 a86 p69r4 a74 a84 c9r t9C2BC** 6A6 6F4 6H1 **d4b a49 fDc r58** 5F1 3D1 5D9 **u369r2 uGCFc5 a95** 2G2 **oCFIc2** 3E9 **d2r a18 h69** 9C6 2B6 2C9 9A9 4B9 9B4 5A4 5B5 1B8 **pADc8 q2E a52 cDc eDAc8 r58** 7A8 6C8 4A2 3C2 1A5 1D2 2E7 2F8 3F5 2H5 1H7 5E2 4D8 4E6 6I2 5H8 8C5 9F2 7D6 8D7 8E8 7E4 8H2 8G4 7G5 9I8

45: 1G4 6C1 3B1 9C5 5A5 4G5 3H5 2E5 6G9 4E9 4I4 5C4 **a36 a37 a46 c2r cHc e42r2 m7r dFc uDAHc2 uEAHc2 a82 q7F q9H** 9D1 1F1 7G1 7E2 7H4 8H6 7F6 5D6 5G2 5I8 6H3 5F3 9H2 **b7r8 c7r r28 pCDc3** 1E6 **s9Er** 8G8 **o168r7 cEc e81r3 fCc p93r3** 2B3 3C6 2G6 4B6 6A7 1C7 4C2 3A2 2C8 1A9 2F2 3E8 1D3 3D9 6D2 6E4 4F7 8C3 7B7 7A8 7C9 9E3 8D4 8E7 9F8 7I3 3G3 3I7 9G7

46: 1E1 5E5 1F5 7I3 9G5 9H6 5A6 **a57 dHc f6b p96r1 p96r4 u358r9 s1Br uCDGc9 c1r i48** 8G2 **u825r8 s7Ar v1258r8 cIc c7r e84r4** 6F3 4C3 2B3 3H3 **p74r8 q7E** 3E2 2D7 9D2 5H7 2H8 2I5 3A5 **a19 a88 t4A8Bc q8B** 5B8 1A8 1B4 7A4 7B2 6C2 2A2 2C1 9C8 7E8 8F7 4E7 6E6 4F4 6I4 4H1 6B1 4A9 6D9 4D8 4G6 6G8 5I9 1G9 3C9 1C7 3I7 8A1 8B9 9E4 9I1 8H4 7G7 8I8

47: 3A2 3B6 1I1 5G2 7B5 7D2 4F2 5F1 4A1 8D9 6F9 5A9 6A6 4I9 4D6 3G5 2F5 3H9 7G9 **a43 bIc4 p82r3 a33 bIc3 p82r8 q3I a28 bIc8** 4B8 4E4 **a44 h34 c1b pGCc8 u715r7 s7Cr v2568r8 w9A8** 9C1 7H1 7I6 5H6 7A4 **o157r7 q2A** 8I3 2H3 9A3 7C7 2A7 1C8 3I7 1D7 3E3 1B3 3C4 3F8 1G4 2I8 5C3 5B4 6D3 5E7 6E5 5D8 5I5 6H8 6I4 8A8 9F7 7E8 9H4 9G8

48: 1A5 2A1 3E4 1E7 3H2 4D2 5H4 6F4 4G5 7E5 8B5 8I2 7C2 6C9 5E1 3D1 1I1 **a18 a47 a88** 8A8 **cHc pEAc3 pHCc7 u318r3 uADIc3 a43 uBFHc6 v1378r3 t2B4Cc oBFHc6** 5I8 6E8 9D8 **d3b s9Ir d9r q2I** 9I6 6G6 2H6 3C6 5B6 5A7 4A3 4C4 2B4 5D3 1F3 3B3 2C7 1C8 2D9 2I3 3G7 2G8 1H9 4E6 5F9 6I7 8C3 9A4 9B7 7B9 9E3 8F6 7F1 8G1 7G3 8H7 7H8 9G9

49: 1F2 3H1 5C1 5B7 4F1 4E7 7D1 8F7 8I1 6B2 2A2 4H6 **a35 a49 d2r b2r4 fCc h79** 2D7 3C7 2C9 3E9 9D9 **p48r3 pFIc3 s1Br s9Hr t4G7Ic a96 uCFIc3** 3B3 **p35r6** 6D4 **p39r8 q3G** 3D6 5D5 5F3 **a16 c1r cAc o189r5 q7B a84 cCc c8r a94 cHc e84r3** 9E3 7F5 1E5 2B5 1B6 3A8 1C4 3F4 3G5 2I6 2G4 1I8 5I4 4G9 5A9 6C6 4A3 5E6 6E8 6I3 7C3 9A4 8C5 8A6 7B8 7E4 8G3 8H4 9H5 7G6 7H2 5G2 5H8 9G8 7I9

50: 2C7 5G8 2H8 3F8 9B2 9A7 4B7 5D7 8C8 1F2 3G2 **a13** 7H3 **bIc3 d9r** 8A6 9C3 1A3 8D3 8E1 9D5 **cEc** 6F3 **p41r1 i35 a99 fIc t5A6Gr cGc c1r e41r1 o157r5 v2389r9 q5A** 5C6 6E6 **eECc4 eIFc4 q4C** 1C5 3B9 2G5 3E5 2E3 1I1 2F1 1D9 3I3 2I9 4D1 4E2 5F4 6G1 5A1 6B5 4C4 6A9 6H4 1G4 1H6 5I5 4I6 4H9 8B4 7A5 7C9 7D2 7E4 9F9 9I4 9G6 8G9

51: 7H1 8H9 **d1b** 2E1 2A9 6C9 **a48 cHc e42r2 f9r a77 g5r** 6A4 7B4 **a43 a45** 6G5 **u924r6 a96 dIc u368r8 t3H2FR a26 s1Gr** 2B3 1C8 1A1 5B8 **h57 q2F** 4G7 5C7 3B7 3C5 4C1 4A3 4B5 5I1 8A5 7A7 9E5 5D5 9I7 9C2 **dEc p63r3 pIDc4 q7G** 9H6 4I6 2G6 3H8 2F8 2I2 6H2 4F2 6I8 5H3 6D3 7G8 8D8 **bIc4 r28** 1E3 1D6 3D4 3E2 3F9 3I3 1G4 7D2 7E9

9G3 7F3 8C3 7C6 8E6 5F6 5E4 9F4 8I4

52: 1G9 6A4 4B9 4A7 8C9 7A6 4F1 6H1 2G1 6I2 8H2 9D2 2F2 8G6 **a17** 9B7 **a34 a43 a58** 2H8 **a93 dCc** 3A1 1I4 3D4 8D7 **c7b r38 u915r5 t8F7Ir v2568r3 q2D** 3E9 3H3 **oAGHc5 p37r5** 8B5 1A5 3I5 2D5 1E3 1F8 3F7 1C7 3C6 1H6 4I6 5D6 4D8 5G8 5H5 9A3 8F3 6D3 6F9 7F5 7D9 7I3 9G5 7G4 9C4 2B4 2C3 5B3 5C1 7B1 9E1 7E8 9I8

53: 3D7 6I5 7C6 8E7 5F7 1D3 8H3 **a13 fBc p17r4 a94 pCDc8 t1I3Br uHBFc6** 5G6 **s2Cr a19** 8C8 5C4 6D4 5D8 6A8 **a49 c7r cGc c3r h39** 3I3 2C3 3C9 2I8 **o267r9** 4H7 6B7 4B6 **d9r eGBc1 pHEc1** 6F6 **a51 gEc p38r2 q8A** 7A1 3B1 1I1 3G2 6H1 5E1 4F3 5A3 4A9 4E2 2F2 1A2 2B4 2E5 1E6 1H4 2H6 2G9 4D5 6E9 5I9 8B2 9A4 8A5 9B9 9F1 9E3 7F5 7E8 8D9 8G1 9I2 7G4 9H8 7H9

54: 3E7 4A5 4I1 7E3 9F5 **dCc bIc2 bIc7 c8r** 8D1 1F1 **d9r p41r2 p51r4 pECc8 cBc m1b a13 d1r e51r4 q4B a63 t5A4DR u746r8** 9D8 9I6 9H9 **a28 cHc r28 e82r6 c5b bIc9 o258r9** 3G5 2C5 1C3 3B4 3C8 2G3 1G4 3I9 1D9 2B9 3A6 2E6 2F8 3D2 2H2 5C4 5F2 4B2 1A2 1B7 6A7 5A3 6B8 4D3 5D6 5E8 6F9 6H3 6I4 4H8 5G9 8B6 7A9 7F6 8E9 7I2 8C2 9C7 7C1 9G1 7H4 8H5 8G7 7G8

55: 7G3 3C7 **a12 d9r** 9F7 7A7 **dAc** 5A4 **f2b** 5E3 6E7 **h38** 3B4 2B2 **mHc bIc2 p27r4** 9D4 2E4 1I4 1G2 1H7 5I7 7H4 1F6 3E8 1B8 3A3 1D3 5F8 4H8 9B3 9A8 4A6 **o357r1 s7Cr t6A5Dr q5D uDAIc2** 4E5 **a52 uBDGc5 a45 q5D** 6B5 5G5 5H6 3G6 3H9 **r38** 8D5 2F5 3D1 2H1 3I5 6F1 5B1 5C9 6A2 4D9 5D2 4I2 6I9 8A1 7F9 8B9 7B6 8E6 7E2 9C2 7C5 7I1 8H2 9H5

56: 2F6 3I5 4A7 3B7 5E8 7D6 **a27 a33 a43 cBc c7r** 7E3 3D3 **pGCc2 pBIc8 c6r s5Hr t6C1AC a44 a48** 6I6 5A6 **c4r** 4G8 9I8 7A8 1C8 6B8 6A3 6C4 1A4 9B3 7G5 **a94 a97 c9b r18** 8D5 9A5 **o258r9 uIABc1 u157r2 a32 e82r2 cEc b8r1 q7F e94r9 s1Fr q3F** 3E1 2A1 3C2 2E2 3F4 1F9 1D7 2H9 2I7 4D9 5B9 4C1 6F1 6G9 8B1 8A2 9C9 9D1 9E4 9F7 7F2 8E9 7H1 5I1 1G1 5H2 1I2 1H3 4I3 4H4 9G2 8I4 8H7

57: 3H9 4D2 5D9 6B9 6A2 9C9 8E8 3D8 9H8 2I8 9G5 2H5 3B5 6I5 5E5 7I9 3C2 **a17 a43 a86 b3r1 c6b pICc3 pIAc4 s9Fr u936r3 u915r4 u859r7 oAFGc7 v3469r3 p28r3** 7D3 1D7 2B7 2E6 7F6 3A6 **a13 cFc c7r c3b e76r4 c9b h13** 6F3 3E3 3F1 4E1 5F7 6E4 6H1 4I4 5C4 1B4 4B6 4A3 5G6 1H6 1G2 4H7 9B3 8C6 9F4 8A4 9A7 7E7 7G1 1I1 2C1 1C3 2G3 8B1 7B2 8H2 8I3 7H4 8G7

58: 3A8 7A4 8C8 5G8 7C1 9C3 4C2 **a53 a56 a61 a64 eGBc9 d8b fIc g3r e93r2 mFc a24** 4D6 **p63r7 b1r7 q8F t3B2Hr t2H6Ic** 3H5 **e63r7 q1E q1E s6Ar t8I7Er u524r3 q6A p25r3 a43 q5C** 5H6 6I7 2H7 3B7 2A3 1A2 2C5 5B3 5C7 4H3 6F3 6G9 4A9 5A1 6A5 6B6 4I1 5I4 4F4 9A6 8B9 7E6 8F5 5D5 1E5 3E3 2D2 3D4 3F9 3I2 1I3 2G4 1G6 3G1 5F2 9E2 8G2 7I5 8I6 9I8 7F8 7D7 1F7 1D1 9F1 9D9 7H9

59: 2E9 2G2 1H1 5B2 4A1 6A9 4F9 4D2 5G1 9H9 5C3 2I5 2C4 **a13 a36 a37** 4I8 **a97 gFc** 3D4 **o169r5 t7I8Ar d7r cDc p57r6 uBADc6 v4578r6 a66 q7E b5r7 q6D** 3I7 1I6 5E7 6D6 4C6 6C7 6B8 6F5 5F4 6I4 6G3 5H6 4H7 7I3 9F3 2D3 1B3 3C5 3A8 3B6 2B1 3F1 3E2 1D5 1F7 8A3 7A4 9B5 9A6 8C8 7D1 8F2 9D7 7F8 8H4 7H5 8E5 7E6 8G6 7G7

60: 3E4 8D6 6C6 **a22 a66 a74 b8r9 dDc** 1E1 **a25 a26 a28 d1r** 2F5 **g5r a64 h68** 1A8 2A6 3F8 1F6 3H6 **o159r3 c3r** 3G7 **h23 dBc s9Ar u824r1 t3I8Gc q2H t6H9GC a92 c9r cAc c9r c7b eDAc5 p96r5** 4G4 2H4 8I4 8G9 3I9 1C9 3B3 2C2 2B7 3A1 3D2 2D3 2G1 7B2 9C3 9A9 7I1 8B1 4C1 5C7 5A4 4B5 4E7 5E6 6E2 5D5 5F9 5G2 5I3 1G3 1I5 4I6 7C4 7A5 9D1 9E5 7F7 7E8 7D9 9I2 7H3 8H5 6G5 6H8 9G8

61: 5G1 4F1 4I2 9C2 9E1 9D7 7H7 1G7 9H3 7F3 4C5 1E3 1F5 5E5 3I5 **b7r4 d3r s9Ir u528r6 d6r o169r6 q6A q8B a88 a98 c9r pICc9 t1A7CC a79 t9F5DC v3569r9 q5D** 4B8 6A3 3B3 3A1 5B6 5C7 2B7 1B2 3D2 2E9 1C9 1A4 2C8 1D8 2F6 2H2 1I6 4D3 6D6 7B1

273

7C4 9A6 7A8 8B9 8E8 9F9 5D9 5F4 6F8 5H8 3G8 3H9 6G9 6H5 8D4 9G4 8G5 8H6 9I8 7I9

62: 3B1 2D3 6F2 1E2 5I6 6C1 8A2 8F1 8D8 9G2 3I2 8I4 3H4 2F4 4D4 5C4 9B4 6D5 6A8 7C8 3D7 9D6 **d6b pECc5 pFBc7 q8E a66 s1Ir cIc h58** 2I8 4G8 4I5 **e92r5 uBFIc6 u189r9 a39 q2G** 5G3 4A3 4B9 **a67 oBFHc7 v2358r6** 1C7 2G7 7B7 5A7 6B6 4F7 5E6 1F6 2E5 3A5 1G5 3G6 1H9 1I3 4H6 6H7 9C5 8C6 2A6 2C9 7A9 7F5 8E7 9E9 7H3 7I6 8G9

63: 8D3 8H5 5H8 **b5r2 pBGc3 pDBc9 uCFHc2 u269r6 dCc a71 cBc a77** 9H4 **c9r a79 cBc cAc cAc e42r3 g2r o269r6 c7r** 2D9 3A9 2A4 **h19** 8G7 **pGDc4 t5I4Dr a67 s6Gr uHCDc1 t3I4Gc a62 d1r** 6D1 4I1 5I7 6A7 4B3 3C3 1C1 1B7 2C6 2B8 2G3 1I6 5B6 6F6 4F5 3E5 2E7 3H7 2H1 3F1 1D4 2F2 1G2 3I4 6C5 5E4 5D2 4D7 6H2 6I3 4G4 6G9 9A3 9C7 8F4 7D5 7E6 8E2 7A2 4C2 4A8 8C8 9F9 7G1 8B1 7B9 9G6 7I8 8I9

64: 1B1 3D5 1I5 2I9 5C5 5F4 7E1 8F8 1F9 7F2 9E6 3F6 9D9 7D7 **a16 c5b d8r fCc h19 fAc p76r4 pAIc6 t4A9Bc a44** 3G4 **p61r2 u637r3** 4I8 2H8 3A8 5E8 4E9 5A9 4C1 5G1 8A1 9C8 8C9 **a17 cGc e61r2 oCEIc3 r28** 8H3 7C3 **cBc a46 a47 q7I** 5I7 5H6 1G6 1H7 3E7 2D3 1E2 2G2 3I3 5D2 6E3 6H2 4G3 5B3 6I4 9H4 7A4 4B4 4A2 9B2 8B6 2C6 2B7 6A6 6C7 9A7 7I6 8G7

65: 3A1 5E1 9E2 7E5 7I1 6I2 2G2 3F2 **a15** 2H3 1B3 8I3 **a14 a99 p41r8 uFCDc9 a29** 7D9 **cFc e41r8 o147r7 dIc d6b t9C7Gr** 8C2 5B2 **cGc e93r6** 5A6 6A3 5D3 3E3 2A5 8B5 **a44 v1368r4 t9D7AR q6H** 5G5 6H4 5F4 4E8 3D8 1E4 3C4 2B6 1C9 1F6 2F9 3I6 3H5 1I8 1G7 4B9 4A4 5C7 6E9 4I7 5H8 5I9 7B4 9C6 7A7 9A8 8D4 9D7 7F8 9G4 9I5 7G6 8H7 9H9

66: 2A8 1G7 3I5 2I3 6A4 5B7 3C7 4D4 5F5 6D8 4I8 7F7 9I4 7H8 9E8 8B8 6H2 **o469r6** 2H6 **p58r3 pBEc3** 6F3 5A3 **a46 fCc u815r9 v2469r1 t3F2CR a11** 7I1 **a22 cDc q2C** 3H4 1E4 **e81r3 t1D3Br pFBc9** 2C9 3A2 1A1 1C5 3B3 2F2 3D1 1D3 3E6 3F9 2G1 1H9 4F1 6C1 4C6 4B2 5D6 5H1 6G6 5I9 9B1 9C2 8C3 7B9 7E3 9F6 8D9 7D2 8G2 7G5 8A5 7A6 8I6 9G9

67: 5E1 5D4 4A4 7B4 8G4 2I4 9B8 7H8 **a25** 1B5 **a52** 9C2 **a91 bIc9 cIc** 5I2 4F2 **cFc c7b b8r9 c9b dAc a47 h13 t1I2CR** 2F6 **oAFHc7 c1r s2Er u614r9 v1467r9 pDGc9** 7I9 9A9 7C5 5A5 6G5 4G9 3H9 2B9 3B2 1D9 1H6 3A6 1A7 2G7 3F7 3E5 1I1 2C1 1C3 1G2 3G3 6C9 5C7 4C8 5F9 6D8 6I7 5G8 8A1 8C6 9F5 7D7 7E2 2D2 2E3 8D3 8F8 8E9 9G1 9I3 9H7

68: 3A5 1H4 4H5 5D5 7A4 9G5 8B5 3F2 **a52 b3r1 c3r cGc c5r** 6A9 **a48 d4r a56 dBc** 1A2 **dHc h19 fIc** 7B2 **o258r3 a93 pIEc6 r28** 9I2 6H2 4D2 8E2 4I4 **a67 bIc6 u137r7 w7D8 bIc8 t2E3GR a17** 7C9 9H9 3I9 3H1 7I1 **d9r oCDGc7 d1r q1G** 1D7 3C7 1B6 2A1 1C3 1F1 2E6 2D8 1E9 3G6 2H7 2I3 1G8 4B1 4C6 4A8 5F9 5E8 6G3 5A3 6B7 5I7 6I8 9B3 8A7 9C8 9D1 9F4 6D4 6F6 7D6 9E7 8F8 8H3 8I6 7G7

69: 3H3 5C3 5A5 6A1 5F7 4I7 1G7 3C7 2G8 9A7 9C9 8C5 7F3 2D3 7G9 4D2 6F9 1D9 5I9 5G1 9H1 **cFc o369r2 pHBc4 t1H2CR u735r8 a78 s9Dr v2468r4 q7H cDc h48 q9G t2I1Br q3D** 2F2 1C2 3B8 1B1 2C4 3D1 2I1 3I2 1H4 1I6 3E6 4A4 4C8 6G2 6I4 9B4 7B6 7A8 8A2 8F1 9E2 7E4 5D4 5E8 1F8 1E5 9F5 8D6 9D8 7H2 8G4 9G6

70: 1G8 5E2 6F4 2C4 **a39 a56 a71 cHc** 3I9 **b2r1 p93r2 p16r9 q1A** 3C1 1H1 3H6 **u926r3 uGADc3 o478r3 cGc q9G t6E4Br q5C** 1C9 4B9 6E9 **a47 d2r a22 p14r5** 6D1 2F1 2D9 4G1 4A3 9C3 **fIc a96** 9F2 3D2 **g7r a87 i37** 5C5 6C7 **h67** 9G6 5I6 5G7 7H7 2I7 2H3 6I3 6H5 9B7 8H2 9I5 **q3F** 2E6 1A6 3B5 2B8 2A2 1D5 3F8 4F5 4D6 4E7 7B2 8B4 8A5 7A1 7F6 8D7 7D3 8E8 8F9 8I1 8G3 7I4 7G9

71: 2H5 3C5 1H7 4D4 4H6 7I6 9E6 1F6 2B6 **a31 a63 cAc dCc** 4C1 **a78 d1b** 1B2 **a13 cEc d7b c8r fGc** 7H8 **b7r3 b7r9 d8b o159r8 q7E dFc d5b p63r8 a28 s5Gr u368r9 v3678r9 b2r9 b5r9 q3F** 4F3 6D8 3F8 4E9 3D9 3E2 2D1 1E3 2C3 2A9 1C8 3I1 2I8 1G9

6B9 5G8 4A8 5H9 6G1 5E1 6E7 6F5 6I3 9B8 8B3 9C9 8F1 9D2 7D3 7E5 7F9 9H1 8H2 7A2 7C7 5B7 3A7 3B4 5C4 8A4 9G3 7G4 8G5 8I9

72: 2H5 5B8 5E4 5I9 7E9 2D9 5A6 7G5 5D2 **a23 fAc p72r4** 3G4 1G9 3A9 1A3 3E3 **dIc fCc c7r p73r1 p92r8 a28 s6Fr s9Cr u348r2 u419r7 v3567r1** 4H2 **a32 a81 b3r2 cFc oBFHc7 bIc7 q2I** 9I8 3H8 1C8 2B7 2C6 2A4 1E7 2E2 2F8 2I1 1I2 7C4 8B6 9C2 3B2 3C1 4A1 6C7 4D7 4E8 6E6 6D5 5H1 6F1 5F3 6I3 4G6 7B1 9A7 8A5 9E5 8E1 8F7 8D8 9G1 8G2 8H3 8I4 7I6 7H7

73: 2D2 3D9 3E4 1G2 5C2 4C4 4A7 2C7 6I2 5G7 6G4 4I5 7F4 5D4 7E7 8I7 1A1 **a61 a66 a69 a81 bIc9 d8r pICc6 s9Cr p73r3 uBFHc3 a43 s6Ar v1379r3** 2G6 7I6 4E6 **b7r8 cCc e73r3 s3Ar** 2A9 **c4b o258r8 cFc q2B** 8B6 6A6 3C6 5B8 3A8 1C3 2B5 2F3 1E5 3G3 3I1 2H8 4D3 6B3 4B9 5F1 6F5 6E8 4H1 5H6 6H9 7A3 9C5 7C8 8C9 8D1 9E3 8F8 9G1 8H3 8G5 9I8 7G9

74: 6F6 4D9 3H9 1H4 5H5 **a13 a16 dEc mGc** 6H2 **a63 b6r7 c2r pIDc5 p14r7 a67 s3Fr t1A2DR q1G** 1I5 3F5 3E4 8F3 **t3C1Dr q2G u835r2 c9r** 9D5 8A5 7G5 **e94r4 o358r2 u628r8 a48 cBc** 7B6 8E6 7E9 **e76r1 q9A** 8B8 5B2 6B3 5C4 4F4 9B4 7C1 4B1 5G1 2I1 3G2 1A2 2C8 1C6 3C3 2D2 1F8 2E7 1D3 2H3 2G6 1G7 6A8 6C7 6D1 5E3 5F7 5D8 4I3 4H7 4G8 8C2 9A7 9C9 9F1 7D4 9I2 9G3 8G9

75: 9B3 7B4 9E9 8E1 9I5 7G8 2C1 9A1 2F9 **a17 a64 a92 dHc fEc q3H** 3G6 8G7 4H7 9C7 **cDc o168r6 t2D6Ec** 1E6 **cFc eECc5 pFGc2 uAFGc2 v2479r2** 1I3 5G3 4E3 5E8 4C8 3A8 3B2 **d5r q1A** 4D2 6F6 5C6 5B9 3C9 1A5 1B7 3E5 1H9 1G1 2I2 1F2 3H4 6B1 6E4 2D4 2E7 5D7 6A7 5A2 5F5 5H1 6G2 5I4 4I6 7C5 8A6 7E2 8F4 8D5 9D6 9H2 7H6

76: 1C2 6A1 4B2 4C5 5C3 9B4 8C6 8I2 5G9 4G1 **a47 a64 a67 a73** 3E3 1A3 7B3 5E1 8E4 **cFc d9r h792** 3C8 **b9r8 bIc8 q8D uIBCc9 dHc c1r c3b p82r7 vBCHIc7** 9G8 2I8 **o127r9 fDc** 2F2 7D2 **pIDc6 a56 q2G** 8D7 5F7 2E7 3B7 2A9 3F6 3D1 1F4 1D9 2D5 3H4 1H5 2G6 1G7 3I9 6C7 6B9 5D4 6G4 4I6 6D6 4H7 6H8 7A7 8A8 9C9 9F1 9D3 4F3 4D8 7E6 7F8 7G5 9I7 7H9

77: 1B3 3C5 3F9 6A3 7B6 8A7 8I3 9F3 5E3 7C3 9C9 9H5 9A4 **a18 a21** 3I1 2I6 **a99 bIc4 p95r1 p24r2 pCEc7 s5Br cBc p51r7 uFAGc1 d4r t4E5Hr** 6E9 5I9 7D9 8H9 **e63r7 c1r e51r7 fDc a51 c5r eDAc2 oACHc8 r08** 9D8 7A8 2C8 3B7 2A2 1F2 1D6 2E7 2D1 3H2 3G4 1H7 6B2 4C7 5B8 4A1 5F1 4D2 6D5 4E6 5D7 6F8 4F4 6I4 4I5 1G5 1I8 5H6 6G7 4H8 9B1 8E1 8F6 7G1 7H4 8G8

78: 1A6 3G4 4A4 2G3 1G7 3F3 **a29 a66 a91 d2b d9b** 7I4 9E4 6F4 9C6 6E6 5G6 7F6 8H6 2F7 8A7 7D7 **a92 a95 o347r8 dBc o346r1** 8I1 9I3 **pFIc5 q5C t3H5Ic a62 u529r5 v1259r5** 1F5 3D1 1B1 5F1 9A1 **a12 q5C** 5A8 5C2 4H8 6I9 1H9 2E9 1E8 1I2 2I8 3H5 2B5 2A2 4C9 6C1 6B7 3C7 3B8 5D9 4E5 4D3 4G1 6G2 5I5 9B2 8C5 7C8 7B9 8D2 8E3 9D5 7H2 7G5

79: 1C2 7C3 8B5 8C1 9C6 8A8 9A7 **d6b d9b** 7E7 9H5 2I5 7F5 5E5 7H8 7I1 5G1 5I7 8H7 **a68 a48 p91r4 pHAc4 u619r4 uDAHc4 v1689r4** 5F9 3F3 **a89 oCDHc9 c3r** 3G7 2C7 **q4C a44 s1Ir p18r4** 9G4 8I9 9E9 **c1r cBc h18** 3E1 2B1 3B8 2E6 6F6 7D6 8E2 8F4 7G2 8G6 **q2A** 2H9 3D9 1B9 2A3 3C4 1G3 1I4 2D4 1E8 2G8 6B3 5A4 4A2 4C9 5C8 5D2 4E3 6E4 4D8 4H4 6I8 6G9

80: 3A4 5H4 6E4 **a66 a75 f3r fCc a76 a78 c7r p14r6 uBFIc6 uFBHc6 v1479r6** 2D2 **a12 b6r2 fAc q6C** 4C6 1E6 7D6 9A6 **a83 a88 b1r5** 7H5 9C5 7C1 **cBc c8b e94r1 f5r** 5G5 1I5 **o279r7 q6C** 3H2 1C2 2H6 3B6 2B5 3E5 2I1 1G9 4G1 5F1 6F6 5E9 3F9 2A9 3C7 2E7 5B7 6C9 5C8 4E2 5A2 4A3 5D3 4D8 5I6 7A7 8A8 8B9 9E1 8F7 7E8 8E3 8H1 8I2 6G2 6I8 3G8 3I3 7G3 9G7 7I9

81: 3C9 5H9 9A9 8D1 8E9 7G9 3H6 **a15 a28 a95 bIc5 p41r6 d1b** 1A5 5I5 9G5 **f4r**

oCEIc3 bIc3 uECGc4 v3457r4 2A2 **b4r2 bIc4 fBc i34** 2D8 **s1Er s6Br a42** 9B8 1C8 **a16 h56** 4E5 6C5 4C6 6F6 5F2 6B2 5B7 4D7 5D4 4A4 5A3 6E3 3D3 2C3 3B4 3F5 4H3 4G2 7B3 7D5 8I3 7F4 8F8 9E7 2F7 7H8 **q2G** 8G7 6I7 1H7 6G1 1I1 2B1 1B6 2E6 1E4 2G4 9H1 8H2 9C2 8C4 9I4

82: 2F5 3A5 4B5 6H5 8I5 5B7 5C2 **a23 a87 b9r2 c6r dAc** 7C7 3I7 **eIBc1 c7r h23** 7G2 8A2 7A3 **p71r6 a36 p91r9 q1F u349r8 uGAEc8 w2G1 q6G** 3G3 **o349r8 d1r dIc** 5G4 **e91r9 f2r** 2C6 **c8r t2G9Hc u429r3** 5H3 6G1 5E1 4I8 6A8 3C8 2B1 1B4 2A9 1A7 3H1 2I4 2G8 1E8 1F2 1H9 1I6 4C9 6E9 8C1 9B9 7B6 7I1 9I3 8H6 9D6 6F6 6D7 2E7 2D3 9E2 4D2 4E4 4F3 8E3 8D4 8F7 9H8 8G9

83: 1C3 1G9 2C9 5E6 5H3 4G6 6C6 3A6 2I6 1I1 7B6 7D3 8A3 7G4 7A2 **a55 a59 d5b** 4F9 **a57 cBc a75 pHDc2** 6F7 **a52 r28 s9Dr uFCIc2 v1246r5 cEc c1r d8b eIEc8 oCFIc2 q3E** 1F4 3E8 2D7 2E1 1E5 3C5 1B2 3F2 3H4 2H5 3I7 1H8 5C2 5B4 5A9 4B5 6D5 4D2 6H2 5G7 5I5 9C4 9A5 8F1 5D1 5F8 9E2 7E7 9D8 8E9 9B9 8B7 9G1 8I2 8G5 9H7 7I8

84: 7F5 9I5 2G5 1A5 9H2 8H9 9E9 5F9 4B9 2C9 5C2 5D4 4G2 1I2 2F2 3B2 1F4 2B4 8G4 3H4 1E6 7C6 3A6 **p67r1 a91 a71 dDc q4D a48 b2r8 q4D t9A6Bc p86r7 uIBHc7 oADGc7 vCFGIc8 b7r8 c7r e71r7 q5I** 5G7 1H7 2A7 3C3 1B8 3D7 3G8 6C7 7B7 8C8 9D8 2E8 2D3 6F8 4D6 5E1 6I1 4A1 5A8 6B3 5I3 6H6 4H8 9B1 9A3 8D1 8E3 8F6 7G1 7H3 8I7 7I8

85: 8B5 8E1 7F7 **a69 a82 a93 c9r e76r4 o349r7 u724r9 a79** 7D2 9D6 **cBc h27 d4r s3Ar t4B2Cc** 3B9 7C9 8F9 8D3 **uGCFc2 s5Hr uHCFc2 a32 d3b** 1E7 **a23 b1r8 fHc h19** 5H9 9I9 9H1 **q2C c3b d1r p15r5 a55** 5I7 3G7 2C7 1A2 1B8 3A6 2E6 2D9 3D8 2H2 1H6 4B7 4E9 5E3 4A3 6E8 9B2 8C6 9A7 8A8 5C8 6C2 5F2 5D5 4D4 6F6 5B6 6B1 5A4 5G1 2I1 2G8 4G2 6H4 6I5 3H5 1F5 3F3 1I3 7B4 7H3 8G4 7I8

86: 3F1 1E3 1D9 6B9 6E2 9E6 7C6 8E9 9H9 4G9 9I1 2G1 7I3 **a88 a92 d9r fIc gAc c1r dBc h23** 3B3 1A2 3A6 1I6 5G6 9B2 9A3 5I2 **pEIc4 p24r5 pBFc5 pBGc5 pEIc8 uAEIc4 v2468r5 b9r5 bIc5 d4r d6b h15** 4A1 6C5 6H1 4H5 **a47 q7B** 5B8 **a44 a68 q2A q1B q2A p39r4 q2E** 1G7 **u948r7 q1F** 9C4 1B4 2A5 3C8 2I4 3D4 1F5 2E8 3G5 3H2 1H8 5H4 6A4 5A7 7B5 8C7 8A8 7F4 4E4 9D5 7D8 4F8 6D7 4I7 6I8 9F7 7G2 8I5 7H7

87: 3C3 2B7 6G3 8C4 8B5 9C7 7F2 2E2 9B2 7G4 6C5 **a11 a29 a78 b6r8 cFc** 1F4 2H4 5D4 2F3 8D3 **d5b o149r6 p91r1 p27r6 a76 pFHc7 a67 d8r p84r1 uIBFc1 v1489r1 c2r s1Gr e91r1 dGc bIc9 c3b q3F** 1D9 3F1 2A1 1C6 3A2 1G1 1H2 2I6 5C2 4C8 4E1 6E9 6F8 5I1 6B1 5G8 3I8 2D8 3D5 2G5 3H9 5H5 4H7 5F7 4D6 4G9 9D1 8F6 7D7 8E8 7A8 7B6 5A6 5B9 8A9 8H1 9G6 8I7 7I9

88: 5A8 7C4 7F3 7D5 7I6 8H8 9F8 1D9 **a46 cAc cHc oBFGc2 p35r5 p85r7 u439r9 p96r9 a59 s3Br a16** 3D7 **cFc** 1E3 6F9 **d3r a11 q5D** 5F2 9D2 8F6 **a81 s8Br c7b r48 v3689r1 c6b** 9I7 8C7 6A7 6B6 3A6 3B9 4C9 5C1 1A1 2B2 2C3 1C5 3F5 1F4 1I2 4B3 4D1 4E8 2D8 2E6 6E4 5E5 5D6 6G1 3I1 3G4 4H2 5I3 4I4 6H5 2G5 2H7 5G7 8B1 7A2 9A9 9E1 8E9 7H1 8G2

89: 6A4 6I6 7C2 7B3 9B6 6D1 5E4 **a79 d8r fIc g2b** 3A2 1I2 **a25 a34 q2C** 9C5 8D5 2E5 2D2 5F2 **a77 h79 pEGc1 q2I** 4A1 5B5 1A5 4H5 7G5 **a91** 1G1 **u928r9 s9Ir v2489r7** 7I4 9F4 9H1 **o289r9 q3C** 1B9 1D8 3D4 3F6 1H4 4F8 5D7 6G7 4C7 3B7 3C8 2C1 3E1 2F9 2I7 5C3 6B8 4I3 5G8 5H9 3G9 3H3 7F1 7D6 8F7 9A7 8A9 7E9 8G3 7H7 8I8 9I9

90: 6A4 6C9 5I9 4I7 1H9 2D9 1F6 2E7 1A7 2G6 5F7 7C7 1G1 2C1 **a23 a13 a24 a33 a94** 8B4 9B9 **cCc d8r e84r8** 3I8 **p58r2 a72** 8E1 9A1 **c7r p75r3 q7E o357r3 u438r5** 5D5 **a45 t9F5EC v3578r2 a62 q3F** 5A3 4B2 3C2 1B5 2B3 1I3 3G5 4A5 4C6 5E2 6I5 6H2 2I2 2H4 4G8 6D8 6F1 3D1 3E3 3F4 4F3 6G3 8A2 9C3 8C5 7A6 9F2 7D3 7E4 9D6 8F8 7F9 7G2 9I4 9H8 8G9

91: 2E7 5C7 9F8 7I7 9A7 8I4 9G9 **a95 bIc4 o368r1 o247r2 fBc e72r4 p72r3 t3E1Cr f1b a16** 3D5 3I8 5H8 4E8 **bIc6 cAc cAc** 9B5 8H5 **d5r p18r2 a82 p14r3 s6Dr v1247r3 b5r3 q6D** 5F5 6D1 5G1 3H1 2B1 8A1 8C6 3A6 7F1 9D4 2F4 1B4 2A3 1I3 1G5 6C4 4B3 5B6 5E4 5D3 4F6 1D6 3E2 1C2 3C9 1F9 6E9 4A9 6A5 6H3 4I5 4G2 2I2 2G6 6I6 7B2 9C3 7A4 8D2 8E3 9H2 7G3

92: 5B5 4C8 6D8 6G5 2D1 5E1 6E4 **dAc d3b** 1G8 **eIAc3 o258r9 t2F5DC uCDGc6 v1246r6 a76 q8H cEc o357r2** 9C6 **pGEc7 q9I** 9B8 9I7 3G7 1I6 2B6 1A9 3C1 3B2 1B3 3D6 3E3 3F4 1F5 1E7 2F9 1H1 3H5 3I9 4E5 5F2 4F6 6A6 4A2 5C3 5D9 6I2 4I3 7A1 7C2 9A3 8B9 7B7 9E2 9D5 7D4 8D3 8F7 7F8 7E9 7H3 9H4 5G4 5H6 7G6 8H8

93: 3C3 1G1 4B3 4C4 6E3 4E6 5I4 4G5 9D8 7G3 2C8 8B8 8G4 **a51 a57 cCc a42 a12 cEc c4b r38 o128r5 s3Dr u745r7 v1289r2 t7B9Er** 7E1 **pAEc9 c2b q5A** 5F5 6F1 5A1 6C7 4I7 5D7 6I9 6G8 4A8 6A2 6H6 9C1 7C6 7A7 8C5 3A5 1B9 1C2 2E5 3D2 3E9 1E7 2H2 1H5 3H4 1F4 3F8 3G7 3I6 1I8 4F2 4D9 9B2 7B4 9A9 8E2 9E4 7D5 7F9 7I2 9G6 9H7

94: 4C3 9C5 8A8 9D4 7H3 7I2 8B2 6A2 7A9 **a69 a86 b5r7 cEc c5r d1r a27 gDc i16** 1A7 **o578r6 a16 pCDc1 s4Ar uGAFc4 pAIc4 a34 v1469r1 d3r** 5E9 3E7 **a29** 4H9 **a65 q2C** 7C6 9A1 8F6 8D9 2F9 7D1 3F1 1I1 2C1 3A4 3B6 1B9 2I4 2H6 1H2 2D2 3I9 5C4 4A6 5F2 6E6 4E1 6B1 4B7 5D7 6G4 4F4 4D5 1F5 3D3 1G3 3G5 6F3 6D8 6H5 5G6 6I7 4I8 7F7 8G1 9I6 9H7

95: 4C5 4E1 9F4 5D4 8I6 1C4 5C6 1I8 **a48 a73 a81 a85 a99 cEc c7r f3r b3r1 f6r a63 o467r8 pIAc2 a12 s1Er s2Dr a29 q8D** 9E2 8G2 2A2 **a87 d3r q8C** 8D7 3D8 3F5 7D5 7F1 2F3 8E3 **uAEHc9 v1258r9 s4Ir** 3H4 3I2 **q4A** 5B2 4H2 5G8 6E8 4A8 6A9 6B3 4B4 5F9 5H3 1G3 2G1 1D1 2D9 1B9 1H7 3E7 2C7 1E6 6I4 6G7 6H5 4I9 7A3 7B6 3A6 3B1 9A1 9B7 8C9 9C8 8F8 7E9 9G5 7H8 9H9

96: 2B2 6I3 5G1 1I1 8F2 6A2 4I9 6D9 6F1 2D1 2E3 4F5 4H2 9I2 1A9 2H9 4E7 4D4 8E4 5C4 5B9 8C9 **a77 b3r7** 2F6 **dBc p39r5 eHAc5 s8Hr u156r6 u749r8 s8Hr v3479r8** 1F4 **a28 dHc d9b h78 cDc oBEHc6 q1B** 8B5 6C5 3A5 1B6 1C8 2C7 2G5 3I6 3H4 1G7 1H3 4A6 6B8 5E8 6E6 5H6 4G8 9G3 7A3 9A8 8D3 7D6 7F8 3D8 3F7 9D7 7B7 9B4 7I4 9H5 8G6 8H8

97: 5E6 7B5 9D4 9E1 5D1 6G1 6F2 **a27 a34 a48 a63 a72 a96 cIc** 2I6 8G6 8I4 1G4 8H1 1I1 3B1 3C4 6B4 6A8 **a32 a39 c7b p83r3 u267r9 v3568r3 bIc3 q9B** 9F8 7H8 **q7E** 6E3 5C3 6C9 **oBCHc7 p53r5 q7G q4E** 2A9 **i26 f1r s1Dr** 4E8 5F5 3E5 4C5 1A5 1C6 5A7 4D9 4H7 4I3 4G2 5G9 9A6 9C2 3A2 1B3 2B8 2C7 3F3 1D8 2D2 1H2 3H9 8A3 9B7 7D3 7E9 1F9 1E7 8F7 7I2 9H3 7G7

98: 5C7 6D5 1F5 2C5 3I5 3G7 7B5 9G4 1H4 5F2 3H3 5G3 6G9 6I1 1G1 **a18 bIc1 pIAc2 a12 pDBc8 uBGHc8 s8Cr v1467r8 t8B9Dr** 2D3 **a78 gEc o258r6 q7A** 6A8 1C8 6E4 **a19 p48r9 a89 q7E** 9F7 7I7 8G8 2H8 1I6 2E6 3E2 1A2 3A9 3D1 1D9 2G2 5E1 4F9 5B9 4A6 4C4 4E3 5D8 5H6 4I8 7A4 9A3 8B6 9B8 9C9 8C2 7C1 8F1 7F3 9D6 7E8 8E9 9I2

99: 3E2 1G1 3G4 5F2 6B2 9C2 6E1 7F1 8C1 5A1 8E4 8I3 8H9 5G9 6G3 **a28 a73 bIc8 c2r cIc p43r6 a36 c3b h68** 5I8 3H8 3I6 4H6 **pHEc7 r58 r58 c1r dCc a77 oCEHc7 a47 q1C** 4C7 **eHCc5 cDc q6D t9D4Ec u724r5 a95 q2E u924r9** 7C9 2B9 1C6 2A5 3A7 3C3 2E6 1E7 2F8 3D9 1H5 2G7 5C5 5B6 4A4 5D4 1F4 1D3 5E3 6D7 4E5 4F9 6I5 5H7 7A3 7B4 9B7 9F3 9D5 9E9 7E8 7G5 7I7 9G8

100: 7G5 2H5 2I2 9H1 **a93 dBc** 8A6 5A5 5B1 **e43r3** 7I3 **f8r h58** 1B5 3C8 8C5 8B8 **a28 pFIc7 pGAc7 a77 d6r b6r4 o679r7 u734r4 v3467r4 q1C** 2A1 **s5Ir** 4C7 **q5C** 1C4 3A9 9D4 1F1 3I1 2G4 3E4 3H3 5F4 6E7 5G3 4E3 5E6 5D8 2E8 2D9 2F3 4I4 5I7 6G8 1I8 1G9 8E1 8D3 8F7 7E9 9C9 4B9 6B6 6A4 5C2 6H2 4H6 5H9 9A2 7B4 7A7 9G7 8I9

101: 6E7 3F7 1I7 4E4 5E2 7D6 8I5 7F5 **a35** 5D5 **a39 a83 f3r o259r3 u258r9 v2589r9**

f1r 4B6 **dCc** 9A9 8E9 1A6 **a81** 9H7 7C7 **t4F3Dc pFCc8 u437r1 a51 q5F e63r8** 2A2 7B2 4C2 4A5 6H5 6G1 6I2 3G2 7H1 8C1 3A1 2C8 1B9 3B3 1C4 1E1 2E5 3D8 2F9 1D3 2G3 3I4 1G5 3H9 6A8 6B4 5C9 5F3 4F8 4D1 6D9 5G8 4I9 4H3 7A4 9C6 9F1 9E3 7I3 9G4 8G6 9I8

102: 9H7 6I5 **a74 cAc** 3C8 8A4 **a12 a78 c7r d4r a57 a68 b4r2 h78** 4A8 4C7 4B2 2C2 7B8 7A7 **o249r1 cFc c1r** 5C4 5B5 **c2b h47 r18 e53r6 s7Dr** 8G6 **fDc s8Ir d8r pHFc3 t4G8IC uHDIc2 p85r2** 6F2 5E6 1D6 3A6 2A5 1C9 3E9 2G9 3G4 6C6 5A9 4D1 2F1 5I1 5H2 3I2 2I7 1B7 2B4 1F4 3H3 2D3 5F3 5D7 3F7 3D5 4G3 5G8 6H9 7E1 8C1 7C3 8D2 9D4 8F5 7F6 9F8 7D9 9G1 7G2 8I3 8H8

103: 2D1 6D5 4F6 4C2 5A3 5B6 9D3 4D9 **a22 a31 a48 a58 cCc** 7C1 8I1 8H3 4I3 4H8 **c5b dAc d7b a79 e86r7 a37 fHc pCIc8 r18 u168r4 v1368r4 bIc4** 1F3 3C3 1C7 3H7 1H1 3F2 5E2 5F8 **o368r8 q7A** 2H6 1A6 1B5 7A5 9B2 2A2 7G2 9H5 9G6 7E6 9E8 9I9 5H9 2B9 8A9 8B8 6A8 2C8 3B4 3A1 1E4 3E9 2I4 3G8 1G9 6B1 6G4 5D4 6F7 5I7 9C4 8F4 7D7 7H4 8G7 7I8

104: 5F8 5H4 4D4 5G9 3H9 4E9 **a32 a38 a72 a78 a96 a97 c7r d3b fCc q3F uDBIc1 a81 dDc pDCc3 q1E** 7H5 8H7 7D7 6F7 **c4b** 4B1 **cCc c2r dAc** 1C4 1B8 8C8 **c1b h26** 5C2 5A6 2B6 1A7 2I7 5B7 7B2 7C6 **oCDIc5 p15r3 a53 v1245r3 q8G** 3G6 1F6 1D9 1E2 2D3 3B3 2C5 3F5 1I3 6A5 4C3 5E3 6E1 5D5 5I1 4I5 8B5 9D2 8D1 9E5 8F9 9F4 8A4 9A3 9G1 8G3 6H3 6G2 2H2 2G8 9I6 9H8

105: 1D4 1I1 3I2 3G8 4C2 6D2 5E8 4H4 7A4 7C1 2A1 2C5 3A6 2E6 8F4 9H2 7I8 6H8 4A8 3F9 7D9 8G6 **a33 a49 a99 dBc p38r3 eECc3 p96r5 a65 pHDc7 s9Ar** 9C9 8I9 **u569r3 v1378r7 a47 a77 p94r7 q9A** 6A7 **pAFc3 o569r3 c4r e94r7 q9I** 6I3 6G5 5H9 2G9 1G3 3C3 1B7 2D3 3E7 2H7 6B9 5B1 6F1 5F3 4B3 5A5 4D5 4F6 5D7 5I6 4I7 9A3 8B5 8C7 8E3 7E5 9F7 9I5 7G7

106: 3H4 5B4 6I8 9A4 **a61 f8r p43r5 p68r7 p82r8 u734r2 q9E** 6E1 5F6 6A6 5H1 6H7 6D9 **b8r6 cIc eIEc5 f9b** 9B5 **dAc p57r3 s1Hr s1Hr t8A7Dr** 8F1 7B1 8B8 **a76 o347r2 c2r** 2B6 **p57r9** 9H9 7G2 9D2 7E6 9C6 9E8 **c1r eDCc3 h25** 1H2 2A2 1A5 3I5 2D5 1D1 2I1 2H3 4E5 4F2 3E2 5D3 4A3 4B7 3C7 2C8 1B9 1F7 3F8 2F9 1G8 1I6 3G9 5C9 5G5 4I9 7C3 7A9 8A7 9F3 7D7 8I3 8H5 8G6 9I7

107: 3H6 1F6 5B1 5D8 5I5 7G5 **a43 a44 a57 c6r c9r dAc dEc** 7E6 8A6 7A2 **bIc2 bIc4 bIc9 d8b a84 p93r5** 2B5 **dCc p71r9 t9H4GC bIc9 q8H** 8F2 **a89** 1G9 **u249r8 v1678r7 c3r o368r8 q1B** 6B8 6C7 9A8 3C8 1B4 3A7 2A9 3F9 3E5 2D1 1D2 2F4 3G1 3I4 1I7 2G8 4H8 6I9 4E9 5E4 4A4 5A3 6E2 4F3 5F7 5H2 2I2 2H3 4G7 7C4 8E1 9C1 8C5 9D4 9F5 9H7 8I8 7I3 8B3 7B7 8D7 7D9 8H9

108: 1F1 4B1 8A6 7I9 4I3 3G3 4E9 6E8 4H8 6H6 7A8 9A1 7H1 8D1 9G8 **a23 a25 a74 b7r4 c8r c4b d3r** 3A9 6B9 6A3 1B3 **b3r4 b3r6 b3r7 e83r2 pBHc7 s9Hr cIc a37 u628r5 cFc oEFGc5 s9Dr uABIc7 vABHIc7 a87** 3E4 7D4 **h67** 4F6 3D6 3F7 6D7 6F2 4D5 5A5 1C5 2C6 3B2 2B8 2H2 1I6 1H7 2A7 1A4 2I4 3I8 4C7 6G5 5I7 7C2 9B7 8B4 9D2 8E5 2F5 2E3 7F3 7E7 8I2 9H4 9I5 8G7

109: 1I1 4H1 5I6 5A5 8B5 6B1 **a44 a57 b1r2 b5r9 bIc7 c4r** 6G9 **t6I8HC** 4I5 **a96 s9Cr s9Fr u348r4 q2B** 9H2 9G6 **a94 f3r h27** 3E2 2I2 3I7 4E7 **p41r3 s3Fr e41r3 cDc** 9D5 1F5 2G5 3G4 **cFc uEAHc3** 8F6 2E6 3H6 7C6 **o367r8 r58** 3A8 2A3 2B4 1B7 1C2 2D7 1D8 3F3 1G3 2H8 6A2 6C7 4D3 6F8 6I3 4G8 7B2 9A7 8A1 8C8 7A9 4C9 4A4 9C4 9F1 5E1 5D9 5F4 7D4 8E9 7E3 8H3 8I4 7I8

110: 1E5 5E1 8F1 8E6 1I1 6G5 **a16 a34 b5r7** 2B7 3B1 2D1 2A6 **a13 cFc** 3F6 **oBFHc3 cCc a12** 6A9 **pEGc9 uHAFc2 v2469r2 q2E** 4E8 **a52 s3Gr a38 cGc eGEc9 t7C9ER q7B** 8A8 7B5 4A5 4C4 5C6 5A7 9C7 9A3 1C3 7H3 5I3 2G3 3H9 2E9 1F2 3A2 1A4 3D8 2I2

3G4 1G8 4I9 6I6 4D6 6D2 4B2 6B3 4F3 6F7 4H7 6H8 9E2 7F8 7D9 8C9 7C2 9D4 8H2 7I4 8I5 9I8 9G9

111: 2F9 5G4 9E9 7D3 5B7 7C7 7A9 6H7 4D7 1F7 6I8 **c9b** 8G6 9G7 2I7 2B3 9I5 **c8b uEBHc2 a52 pFGc2** 3I6 **dCc** 4A8 **b1r8 s8Ar u328r2 a22 v2378r2** 9A4 6E4 **oBEHc1 dDc r38** 3G8 2C8 **eDCc1 q1A** 2G1 9H1 8C1 1B1 2A2 1C4 1A6 3C5 3D1 3F2 1D5 1E8 6A1 4B4 5C6 4C9 4E1 5E2 5F5 6F6 5D8 4I2 1H2 1I3 5H9 9B2 8A5 7F1 8D2 9D6 9F8 7G2 8H3 8I9

112: 7G6 2D8 **a35 a41 a48 a61 a64 a69 b2r3** 3B9 1B1 2H1 **c8r dIc c9b f3r** 3F3 7D3 8B3 7B8 8G8 3I8 3G5 7I5 9C5 2B5 8F5 5D5 5G4 5C1 **o237r7 pEAc6 a46 s9Fr uFDGc2 v2378r2** 1H4 1C6 3E6 **a72 p96r2** 5I2 4I9 1I3 **o159r9** 6D2 **q2E** 1D9 **q6A** 4C8 6F8 5F6 6A6 6C3 2A3 3A7 3C4 2C2 1F2 2E7 3H2 1G7 5A9 6E9 4E1 4D4 4F7 6G1 4G3 7A2 9A4 7C9 8E2 7E4 9D7 9F9 9G2 7H7 8H9

113: 3B5 1C9 4D5 7A9 7E5 8G5 7H6 9G8 8H4 9E4 8A8 **a23 a26 a58 bIc7 c1r cDc h12 cFc h37** 9C1 7F1 1D1 1F2 9D2 **p35r1** 6A6 4F6 5F9 6F8 4H9 **a41 cCc eHAc2 f3r oCFHc3 uHCFc7 v1347r7 dBc q5B** 5I4 6D4 5D7 4I8 5B8 3C8 2C6 3A2 2B1 1B4 3D6 2D3 1E8 3E7 3H1 3I3 2G4 2I2 1G7 5A1 4C2 6G1 5H2 6H7 4B7 6C3 4G3 7B3 8C7 9F7 8F3 7G2 9H3 7I7

114: 2I7 5H7 4D7 9A7 6F4 4F6 8I2 4G2 8G3 3H3 1H2 **a59 a91 b2r9 cFc dBc a11 dDc d2b a26 f9r g3r o258r8 p86r5 s2Ar c1r a16 h16** 1D6 3A6 1A1 3F1 3D2 7D1 **h23 dCc bIc5 e86r5 f7r v1349r9 q9B** 9G1 5G4 **bIc9 c3r h59** 3E9 2F5 1C5 3B4 2A8 2C9 1E8 1I4 3G5 3I8 1G9 6D5 5B5 4B1 5D9 6A9 6C2 5C6 5A3 5F8 5I1 6H6 4I9 7A2 9C3 7C4 8A5 7B8 9B9 9F2 7F3 9E5 7E6 8D8 9I6 7H9

115: 1G3 7A8 8F6 7G5 1I7 4A7 **a83 cDc** 3D7 6F7 7D3 4F3 **c9r d7b a71 p82r2 p41r5 q7I r58** 3F5 **d5r a44 c4b t3I2Cr p52r6 u257r4** 1H8 3B8 8B1 **dGc a66 i18** 7I9 7C7 9H7 9G1 **e75r2 e82r2 oDFHc4 p83r4 q2C** 2H4 1E4 2D6 3I1 2C1 3A2 3C4 1C6 1B5 2G2 3G6 6B4 6C3 4C5 5B9 5E5 4E6 6E9 5F2 5D4 4H1 6D1 4D8 6I2 5H6 6G8 4G9 8C2 9B3 9A4 9C9 9E2 7F4 7H2 8G4

116: 3F4 1D6 2F8 1I3 4A5 6C6 8B5 8D4 7I5 3B8 1B7 6A8 4I8 **a21 b6r7 cDc p48r3 t9B7Fr** 7D7 6F7 6I1 3G1 3H6 5G6 6D2 **s2Gr** 1G8 9H8 8C8 **a73 u735r2 s9Cr uFCDc9 uFDGc9 a89 v1357r9** 9A3 5A4 7B4 9B6 7C1 5B1 7F6 **o357r2 r28** 1E9 2E5 2D1 1H5 4F1 5E3 4C3 5C7 4D9 4G7 2H7 9E1 8E2 8F3 9F9 7A9 2C9 3A2 2G2 3I9 5H9 5I2 9C2 7H2 8G9

117: 1F6 6D9 7B5 9A9 7A6 4B6 5G6 9H6 8H9 4A2 8F2 7C2 **a14 a18 a73 a77 a93 a95 f3b** 3I1 **bIc1 cAc p53r3 q3A** 1D1 2A1 1A8 2H8 1I2 2E2 6H2 7E1 1E9 3G9 **d4r eGBc7 u412r4 c6r j18** 6I8 **o246r3** 7I3 **v1247r4 a34 b3r4 q8E** 8C7 9C3 8E3 4D3 3F3 2B3 1B4 3A7 3E4 2D5 2G4 3H5 1G7 5A3 6B7 6F4 5C4 4C8 6C1 4F1 5E8 6G3 4H4 4G5 5I7 7D4 9E5 9D7 9F8 9I4 8I5 7H7

118: 1C8 5H5 4E5 6H9 7C4 8C5 9D8 9F5 1D5 7D7 8G8 5C6 5B9 2C9 3E9 6C3 4C7 2H4 8H7 **a54 a72 a91 c4b d5r pADc1 pIEc6 u617r2 s6Ir u168r1 v1678r1** 4I8 6A8 4A4 6G4 **o167r2** 5F4 3D4 **c2b b1r3 p43r1 a11 c3b e72r6 q1F** 1H3 7H1 **q7F** 8E1 5D1 1F1 2D2 2G1 1I2 4B1 3A1 5A2 6E2 6I1 4G2 8B2 9B6 9A7 8A3 7F2 7E3 3F3 2B3 3B7 2E6 3G6 2I7 5G7 5I3 8F6 9G3 7I6

119: 3C6 3D9 6B2 5F7 6G9 4G6 7C7 7A9 7F2 4E2 8E6 6F6 7H1 8A1 3B1 2E1 6D1 7I6 **a28 a44 a74 b8r4 cAc c4r f1r** 1E7 **d3r h24** 1I2 3A2 1A4 3G4 3I7 8I4 9G7 **oBFHc8 p43r3 a23 c1r p43r5** 1B5 8C5 9B8 7B4 8G8 3H8 1F8 **o257r5 uDAIc3 a83 v1346r3 q1H** 9H5 5I5 2G5 4F5 3E5 3F3 6E3 5A3 1C3 2C9 2A8 2I3 1H9 4C8 6C4 4D4 5D8 4H3 9E4 7D5 9D3 7G3 9I9

120: 3F8 4C9 7A4 2C4 **b5r3** 3D3 2A3 6C3 5B6 6E6 4G3 4I7 7F6 4E4 **a11 a42 a45 c2r**

cFc o267r1 5I4 8H4 **b8r1 p28r7 a87 t7G2IC u835r5 a85 d8b uCEHc2 v2467r2 cDc h57 s1Hr** 6G5 4A5 6A2 4F2 1E2 2E9 1D7 2F5 2G7 2I1 1G9 3I6 1C6 1A1 1B8 3C5 2B2 3H2 1H5 5E5 5F3 6D1 5H1 6I8 8C1 9C2 9B5 8A8 7B9 9F1 7D2 9E3 8D5 8E7 7G1 8I2 8G6 9H7 9G8 9I9

121: 1F9 4B7 6C9 7A7 9F7 8G7 **a36 a38 a74 bIc4 cFc o357r5** 4I6 **p53r3 t5E3Dc s7Er u948r8 uBEFc8 v3489r8** 1C5 5B5 5I9 9H9 7I5 3H5 3I8 8H8 7H6 9G2 7B2 9C8 8C4 9D4 3E4 9I1 3B1 4D8 6H1 1D1 2G1 1G6 2B6 8E1 8D6 6E6 **e63r2 h382** 2F8 3D3 2C3 3A2 2E2 4C2 6B8 1A8 1B4 5A4 6A3 6D2 5E3 5H2 4G3 4H4 6F4 4F5 6G5 7F3 7E8

122: 2F7 6G2 4D2 4I4 8C2 1A2 7C3 1D4 8F6 **a23 a59 a85 bIc1 c7r** 3A7 1I7 4C7 7A9 **a45 a99 bIc8 fIc h56 u825r3 v2347r8 s8Gr d8r o258r3 f6r a61 a91 dHc q4F** 6I1 5A1 **p58r8 a88 q6D** 2D3 6D5 4B5 6A8 6B6 2A6 3B4 1E6 2E5 2G4 3I6 1H5 3C5 2C8 1C1 2H1 5E8 6F3 4F9 5I3 4H8 3G8 3H3 6H9 9A4 7B8 8B7 9B1 8E3 9F5 8D8 9E9 8G1 9G3 7I5 7H6 7G7 9I8 8I9

123: 2B6 3E8 2E2 1E3 1D4 3G2 5B2 5E5 5D6 6I2 6H4 7H6 9E6 **a21 a29** 2H3 **a35 a75 i57 c9r pDGc8** 5H8 4C8 6D8 **c8r d8b a84 fCc a77 s6Er uEBIc7 v1679r1 cEc oBEIc7 cAc c7r e76r9 q6A** 5C9 3A9 1I9 1G5 3H1 1C1 6A7 2C7 2A5 4B1 4A3 6E1 4F9 2D9 2F1 4E4 5F7 4I7 6G9 9A1 9C5 8D1 8F4 8E7 7B7 7C4 3B4 3C3 8B3 9F8 7E9 7G1 7I3 8I5 9G7 8G8 8H9

124: 1H1 5A3 8F3 9A8 5F6 6H6 6A2 9F9 **a68 c4r** 4I8 4G1 **o349r4 q9B u825r2 u915r5** 8G6 7G3 3H3 **p43r9 t2A1IR b1r7 c2b cEc eEBc9 o349r7** 5G5 2G8 3C8 **c2r r08 a99 dIc o347r2 c8r** 2A5 1I5 2H9 7I9 8A9 **t2C7Bc s5Cr fCc a41 q6D** 8B1 6C1 4B4 5C9 3B9 2C2 1B6 1C7 3F2 2D6 3E4 2E7 1D9 2I4 3G7 6B7 5E2 5D1 6D4 4F7 6E8 4E9 4H2 5I7 7B2 8C4 9B5 7C6 7E1 8E5 7D8 8I2 9G4 7H5 9H7

125: 6A5 1C5 3G5 9B8 9C2 7D5 6I8 **a86 b6r9 cIc** 7F6 **c6r f5r h36 f4r pAFc2 s1Br s5Dr a57 t7I9Er u169r1 uDAIc2 a52 dDc g2b c3r** 5A2 4A8 4C9 6B7 6D2 5D7 4H7 5G4 4F4 1G7 **c8b c7r o378r1 p72r4 eEBc4 q2D** 2C7 3E7 7A7 8A9 7B4 3A4 2E4 8C3 4B3 5C6 5I3 4I6 7C1 9D4 7E3 9E9 5F9 5E8 1F8 3F2 1E1 3I1 2I2 1B2 2B6 3D6 2D3 3H3 1H6 2G9 6H9 6G1 8F1 9H1 9G3 8H4 8G6 7I9

126: 6E9 9A6 3A2 **a24 a34 a55 a77 a87 a96 cBc a43 cCc oBDIc1 bIc1 fGc** 3C9 9B9 9C4 3H3 6D4 **b3r8 f4r pHFc2 uDBIc8 uGBIc8 v2369r8** 1C5 2E5 3E4 3F8 2G4 3G1 9E8 2A3 5C3 **c6r h57** 6F5 5A5 6A7 4F7 **dGc q2F q6H** 4G2 5F2 5D6 4D8 4E3 9H2 8I1 6H1 4B1 2C1 1B8 1D1 1E2 2F6 1H6 1G7 2H8 1I9 5B4 6C8 4I4 5H7 5I8 5G9 9F1 7I6 8E6 7E7 8C7 7C2 8D2 7D3 8B3 7B5 8G5 7G8

127: 3C6 3G3 2H8 2G6 5A3 4B5 5B8 4E8 6G4 5H6 6H1 5F1 9E6 7G1 9C1 **a19** 6C9 **cAc o148r9 p52r2 p52r7 s2Ir uFCHc7 v2569r7 t1A2IR cIc a92 dEc eIDc2 e93r5 q2E** 3E2 1A2 3A7 2E1 3B1 2B9 2D7 2I2 1H7 3I5 1E5 1F4 3D9 3F8 1G9 5D2 6E7 4C7 6B2 4G2 5I7 4H9 9B7 8B4 7E4 8E3 7C3 8C2 9D5 7F7 7D8 8A8 7A5 8F9 7H2 9I4 8H5 7I9

128: 1A6 2A7 6B6 4D7 1E7 4F1 6D9 6F2 5F3 5E5 5D6 7E9 8I7 **a44 a68 b7r4 cFc i58** 8A9 **eEAc1 pEAc2 p19r8 uBDHc8 uHBFc8 v1569r8 q7A** 7D8 **d9b f9r bIc8** 6C5 **b1r5 o379r2 q8G** 2H8 3F8 1C8 2F5 8B8 7A5 3B5 2B9 3I9 8G5 1I5 2I1 3A1 2C2 1D1 3E2 1G2 2G4 4H5 4I6 5I4 4A4 6A3 5A8 4G3 6I8 8C1 9A2 9C4 9E1 8D2 8F4 9F6 7I2 9I3 7H4 8H6 9G8

129: 3D6 2E7 2F8 3F3 2I4 5A6 2C2 3H2 **a29 a31 a42 cGc p96r4 cEc h29 g5b a55 a58 t1H8IC** 2B6 **a19 s4Hr fIc a69** 4D7 **pHBc7 t8C9Er** 8E3 **e85r4 u625r5 oAFGc5 q5C d9r p94r1 s4Br** 6B7 5I7 5G3 2H3 3I9 2A9 1B5 1I1 2G5 1H6 6A5 5C4 6E4 5F5 4E8 6F1 4I5 6H8 4H9 9A4 8C1 3A1 3C7 4B1 4A2 7A7 8A8 9E1 8F4 7D8 7G1 8G2 7I3 9B3 7B2 8B9 9D2 5E2 1F2 1E9 5D9 8D5 7F9 9H5 8I6 8H7

130: 6D9 4C9 1B9 2E9 7I9 7H4 3C4 1F4 8D4 1I8 5H8 6G3 5A3 4A4 5I4 9H3 **a41 a92 c9r q6I s2Dr t1E2Hr u724r1** 9I1 9D7 3D8 **a97 c2r uFDHc2 v1356r2** 8E3 3F3 **e93r6 f7r oCFIc7 cAc c3r p36r2** 5E2 2D2 1E1 3B1 1A2 2H1 3I2 3G5 6A1 6B2 6C8 5B7 4F7 3E7 2C7 3A6 2F6 4G1 4H2 4I5 6I7 7C6 7A7 9A5 8B8 7D1 8F2 7E5 9E6 7F8 7G2 8G7

131: 3D4 2H2 5B2 5A5 4I5 7C5 7G7 **dCc e96r4** 5F4 4F1 **a41 a59 fIc a36** 4E6 9D6 **a88 o269r3 p41r8 a18 t7A1BC d1r** 2E1 **pBGc1 a31 u734r8 uICEc8 v1347r8 q9H** 7F9 9E3 6D3 1F3 1E2 2D7 3C7 2C9 3I3 2A3 1I7 5E7 5D8 6E9 7B3 8F2 9C2 8E8 7A8 1B8 1A6 3B1 1G1 2G6 6C8 6A1 4B4 6H4 6I6 4G8 3H8 3G9 8C1 9A4 8B6 8G4 7H6 9I8 9H1 5I1 5H9 8I9

132: 6D9 5B9 7A9 8H9 1G9 7F5 **a44 a91 a98 d7r a96 e72r2 fEc p16r7** 5G7 **o158r4** 6A4 **e61r7** 8B7 **cFc t1F4Dc** 9D1 **u168r3 v1568r3 cHc** 7I8 7H1 6I1 **q6E** 4F6 3F3 7D3 7G6 8I2 2G2 3C2 1H4 1I3 3I5 4G4 5E4 4E1 5C1 6E3 4A3 2B3 3B4 2D4 3D6 1F7 3A7 2H6 3H8 6C7 4C8 2A8 1C5 2E5 1E8 6F2 4D7 5H3 7B2 8C3 9A5 9C6 9B8 9E2 8F4 8E6 9G3

133: 5F4 4G9 4H4 3F7 7D8 **cDc c2r c2b c3b e72r4 p38r5 p37r6 r78 t6F4Cr t4C5Gr u249r2 uEBIc6** 2D6 1E5 3C5 2H5 3G6 5D5 6B5 9A5 8G5 **a98 bIc7 c5r o156r2 p48r3 a83 p68r7 c7b gCc p57r3 p72r9 q1A** 1F9 2E2 1A2 2A7 2C9 1B4 1C6 2G4 1G7 1H8 1I1 4C2 5A3 6F2 4E3 5E8 4B8 6C7 5C1 6E6 4D7 5G2 5I6 9C3 7C4 8B6 9B7 8C8 7A9 9D2 8F3 8E7 9E9 7E1 9I4 7H6 7G3 6H3 6G1 9H1 9G8 8I9

134: 1C7 3F1 6C3 4C4 5A1 6E4 3D4 4E6 4D7 6G9 9C1 8F6 7D9 8G4 1I4 2I9 1A9 8C9 9G5 5F5 1E5 7I7 2C5 **a42 a12 p71r3 eGFc3 p61r8 u137r8 v1367r8 c8r oDEIc2 a32 s9Er t8H1GC e61r8 a88** 2E2 **h78** 8B7 7C8 2B8 3A6 3C2 1F8 2D3 1G3 1H2 2G6 2H1 3G8 5D8 6F2 4B2 6B5 4G1 5I2 4H5 6H8 8A2 9A3 9B6 9D2 7F3 9E7 8E8 7G2 8H3 9I8

135: 3D7 2H8 5F8 9E8 8B8 7E3 7D5 8A5 7F9 9H4 7H2 9C2 6A2 4E2 1F2 9I3 8I7 5A6 1A7 3A3 2A1 **a19 a39** 6C9 **d6r eICc5 o279r6 a56 p25r4 cCc pICc1 u168r1 t5H1GC** 3G9 1B9 **v1368r1** 5H3 1G3 4B3 **a44 j15 q2D** 9D1 8F6 6E6 2D6 3F4 2C4 3B5 1E5 3E1 1H1 2I5 3H6 5B4 4C1 5C5 6B7 6F1 4D4 5D9 5I1 6G4 6H5 4G6 4H7 4I9 7B1 9B6 7C7 8G1 7I6

136: 3E2 2I2 5B2 7B3 7C1 7A9 8G1 2D9 **a35 a38 a44 cCc d9r** 9A2 **a97 fIc gHc a95 bIc5 cGc pCDc6 q9D s6Fr dEc f5b eDCc6 g3r t5C6FR q6F b5r5** 4E3 **u429r8 oBCDc8 c4r h56 q4B** 1E1 3B1 3C9 1A6 3A7 1B4 3D6 3I4 3G5 1I7 1G3 3H8 6A4 5C6 4B8 2C8 2B5 4A5 6B9 4D1 6F6 6E8 5F9 5E5 5D7 6I1 5H3 5G4 6H5 4H6 4I9 9C5 8A8 8F5 7F2 7E6 9E7 9D8 8H2 9I3 9H4 7I5 7H7 7G8

137: 5B7 5G6 8B9 8A6 9F7 7I7 2H7 3A7 7G9 **a15 a39 a74 a98** 8F2 **a88 p62r6 t7C4AC b3r1 u579r5 d6r** 5E2 **cCc o579r5 q4C c7b** 7A5 **cAc v1579r1** 8H4 1H3 1F6 6D6 4C6 2B6 6A4 6B2 4E4 9C4 9A2 4H9 **r18** 2E1 1B1 2A8 3F3 2C3 1C2 3C5 2D9 1D4 2I2 2G4 3I9 3G1 5C8 4A1 6E3 5D5 4F8 5F9 5H1 4I3 6I5 1G5 1I8 7C1 9B8 9D1 8E5 7D8 8I1 9H5 8G8

138: 4F5 1D5 5A5 5C2 6D9 4B9 2C9 5I9 9B5 8I5 **a43 a47 a54 a24 a56 a57 a78** 9I8 **d8r** 8H9 9F9 7F6 1I6 3B6 3F8 8E8 8F1 3H1 **a87 d7r pGDc2** 9E3 3D3 8D7 **h24 c9r u267r3 u148r3 o267r3 s2Ar v3459r7 t5G9Hc q4G** 6H6 5E6 4E7 6E4 5G7 2I7 1F7 3A7 2F4 1A4 2A2 2B3 1B1 1C8 2E1 1E2 3G2 1H3 6C3 6B7 4G3 4H4 8A3 9A6 7C7 7B8 7H2 9D2 7D4 7I3 9G4 8G6 9H7

139: 3I7 4B1 1A1 2D1 **d5r dAc a13 d3r** 2C3 6E3 5A3 **b2r6 oAFIc6** 3D3 7F3 **fCc p34r5 p39r8** 8F1 9H1 **a92 eFAc8 q3F** 7G2 **e76r7 t4F1Dc u934r5 a95 s8Hr u157r9 a19 c2r a38 eHCc5 q4F** 4E7 6B7 9C7 7D7 8G7 **p34r4 q9E s9Ir** 7I9 5G9 2H9 2G6 5I8 1G8 **b7r4 c6r** 5D4 5C2 **q1E q4I** 9I5 3H5 1I4 3C4 6A4 4C5 4H4 6H2 4F2 6D6 3F6 1C6 1B9 2B5 3A8 1E5 1D2 2E8 6G5 4I6 7B4 7A5 9A6 8B8 8C9 9E2 8E4 9F8 9G4 8H6

140: 1G9 5D6 5I9 4E9 9C9 8E4 7D5 **a52 c5r** 4B5 6H5 5B8 **c4r oBDHc2 d1b bIc7**

p51r4 a14 pCIc6 s1Dr f1r t5H2GC uHAEc1 2G4 9I4 5H4 6C4 1A4 5A1 **eICc6 u367r7 v3567r7** 8F1 2E1 1H1 7C1 9G1 6I1 6G7 7G3 1C7 2A8 4A7 4C2 1B2 2B3 3C6 1D3 2H6 3I7 2D7 3G8 1F8 4G6 4H8 7A2 9B6 8B7 8C8 9D2 9F3 6E3 6F2 3E2 3F5 5E5 5F7 7E7 8H2 8I6 9H7 7I8

141: 9H7 5B2 5H1 **a48 a66 b5r8 dBc mFc a25 b8r5 o149r1 s7Gr t1F2Ar v1469r9 q3A q2H** 6G2 8I2 **q3I** 8B6 3A6 7I6 6H6 3I3 3G4 2B4 7A5 9F5 **a39 bIc9 cEc d1r f8r h23** 1F2 2A2 1A3 **pDIc4** 8H4 7C4 9D4 8G5 7G9 2H9 1I5 2D5 2E3 2F6 3D8 2C8 1B1 3C9 3E7 1D9 2G1 4A1 6A8 5D6 5F3 5E8 4H5 4I8 6I4 4F4 6F9 4B9 6B7 4D7 8C1 9A9 7E1 8D3 7F7 8F8 8E9 9I1

142: 2F9 1H4 5B7 4C9 5H3 6G9 8C2 8A3 **a36** 3A6 3B4 **a11 a74 cEc** 7E6 1D6 9B6 **dIc** 5A4 5I2 2G2 **eGEc7 oCEGc8 s7Hr a98 u915r5 u935r5 a85 v1359r5** 8B5 **a71 a41 c7r h14 cFc** 4D3 **pHFc1 cDc** 6F7 **b6r8 bIc1 bIc8 q3G** 6D1 3E1 2D8 1C8 2A5 2B1 1E7 1F3 3D5 1G5 2I7 2H6 3G8 4A1 5C5 4B8 4F4 5E8 5G1 6I4 4I5 6H8 9E3 9D4 7C4 9C1 9F5 8D7 8F8 7F1 8H1 7H5 8I6 9G7 7I8

143: 2F1 3H6 2E6 9A4 3C4 2I4 5A6 9E8 **cFc** 4F4 1E4 5H4 5I1 7H1 9B1 8D1 7F3 8I3 1F7 **cIc d3r dGc h78** 6I2 **d6r j56 dDc l78 o169r9 b4r9 uBDHc3 a43** 3D3 **p35r2 r08 vDFHIc5 a45 a65 pGAc5 q5C b8r9 q5C** 4A9 8C9 5C5 3B5 1A2 2A3 3E2 1D5 1H3 2G5 1I9 4D2 5B2 4B3 6A7 4C8 6F5 6D6 5E9 5G3 4H5 4I7 3G7 3I8 6G8 6H9 7C2 7B7 7A8 8A5 7E5 9F6 8E7 9D9 9I5 7G9

144: 2B5 3I4 4A9 4D3 5H3 6H4 8D6 7I9 7D5 7A8 5B8 8H1 9I8 9G5 5I5 **a36** 4I6 **c3b f1r p25r7 pBEc7 r58 t4F2DC** 8C4 5A4 **oCDHc2 a72 u368r2 a12 t3F6Dc v1257r7 bIc7 q4F** 1H2 2F2 2D4 3F1 2A1 1A7 1C3 3A6 3B2 1D8 1G6 2G7 3G8 6A2 6C6 6D1 6F8 6E5 1F5 1E9 4E7 5C7 4B1 4F4 5G1 4G2 6I7 9C1 7C2 9A3 9B7 9D2 9E4 8F7 9F9 8I2 7H7

145: 8C5 7E4 9B4 8I1 6E5 5I5 6A8 3B8 **a16 a43 a69 a96 fDc pICc9 pAEc9 q1B u916r9 v1569r9 t8G7BR** 3D3 4E3 **e74r2 s6Fr b4r6 g5r** 2A4 **a51** 2F6 3C6 **e83r9 q1D q2C q2C cBc** 5A3 **h37** 7G8 **q6D** 1D2 3A2 2C9 1B1 3E9 2E1 3H1 2G2 2H3 3G5 2I8 1H9 5C1 4C4 5B2 6B6 6F1 4F2 5D4 5E6 5F7 4D8 6D9 4H7 4I6 5H8 5G9 7C2 8A9 8E2 8D6 9F9 7F3 8B3 7B7 9G3 9H5 7H6 8G7 7I9

146: 1A4 5F6 4A6 5I1 7C6 **a18 a34 a49 c4b gDc** 2F3 2D1 1D9 8D2 9H2 **a93 dFc** 8E4 **p74r7 pEAc7 q2C** 7F8 **a28 c3r h45 c6r r08 q6I t3G9Ic q9I** 1H3 8G3 **u436r7 a67** 4D8 **t1I5Gc** 2E8 1E2 **v3467r7 b8r7 c8r h19** 8B1 9C9 5B9 5C2 2B2 1B6 3B8 2C7 2G6 3G7 1I8 1G5 2H9 2I4 5H4 6F4 3D4 3F5 6I5 4H7 5G8 4G9 8C5 8A7 6B7 5A3 6D3 5E7 5D5 9B3 9A8 9F1 9E5 7D7 8F9 7H5 9I7 8H8

147: 1D9 2A9 4B9 9I6 1G6 9H9 6I9 8G1 6H1 4D1 1F1 3B1 9C1 8C2 3H7 **a83 cIc pIDc4 s8Dr e83r8 t8E2FC uEDHc5** 2F7 8E7 9A7 5B7 4G7 9F2 4E2 5I2 **a45 b4r8 b9r4 u417r3 oABIc3** 4C8 1A8 **s2Gr v1389r4 c2r bIc8 p25r4 a64 c6r q5D** 5C6 4A3 6A5 6C4 1B4 2C3 3D4 2E8 1E5 1I3 2G4 2H5 3I8 6F6 5F8 5D5 6E3 5G3 5H4 4I5 6G8 7B3 7A4 8B5 9D3 9E4 7F5 8D8 8I4 7H8

148: 1A8 5E6 5H5 9D6 4A1 1G6 2B6 1B1 3H2 **c2r** 2D8 **cEc c1b d6r a69 dIc h682** 7I6 6H6 6I8 8H8 7F8 **a93 oAEIc9 p91r5 q7H t7B5AC t9G7BR a84 t8G9Ar uECFc3 v2479r4** 5G2 **q5I** 9I9 2H9 3A9 2C4 1E9 1I4 3D4 1D5 3B5 1C3 1F2 3E3 4D2 6B2 6C9 6F3 4G9 4H4 5A4 5B7 4B3 5I3 7B4 9C5 9A7 8B9 9E2 8D3 8F4 8E5 7E7 2F7 2E1 9F1 7H1 9H3 9G4 8G7

149: 3A6 3D2 2H6 1I8 6D6 4H8 5C8 4G1 8B8 9G6 7E6 9I2 6G2 8H1 **cEc o267r5 o159r7 pDAc4 d4r u624r3 uICFc9 v2467r3 q3H a63 fCc q4A** 6C9 **q6H** 8A9 9F9 **e91r1** 7C4 **e41r4 d4b q2B** 3H7 3G9 5G7 4B7 4C2 2B2 1C1 1A7 2C3 3B4 2F1 1D4 3E3 1E5 1G3 2I5 5A3 4A4 6B5 4F3 5E4 4D5 6F7 6I4 6H3 5I9 7B1 9A5 9C7 9E1 8D3 7F5 7I3

8G5 7H9

150: 5E6 5D5 5I4 4I5 2G5 5G2 1I2 3D2 4C2 8A4 9F2 7E4 7F8 1D8 5A3 **a38 a51 a61 a66 a87 b1r9 c2r** 2E1 **bIc1 d8r p38r9** 9E5 8H5 **r18 s1Ar s7Ir cIc uCHIc6 uHDEc7 a67 uCFIc9 v1247r7** 3A1 **cAc** 1B9 **o257r9 q5B** 6A9 5F9 3E9 2F7 1G7 3C7 1A6 2I9 4B6 5B1 4A7 5C8 2B8 2C3 4F1 6D7 5H7 7B3 9A8 7C9 9C6 8C1 8E7 8D9 9I1 6G1 6H8 3G8 3H6 6I6 8G3 7G6 7I7 9H9

151: 5E4 6D7 2D2 **a17 a18 bIc7 c5r f8r fBc** 7B9 9F9 2E9 3E3 3B8 **a21** 2B1 **a84 dCc** 6B2 4E2 9B3 **fHc eHBc5 pBHc6 u217r4 v2467r6** 3G1 4I1 5I7 6I8 5A8 **cGc c8r** 2I3 **h39 cGc c4r e76r6 o127r4** 8A1 **q3C** 8I2 3H2 9C2 7G4 3I4 2A4 2C7 1B5 3C6 1F4 1E8 1D1 2F6 2G5 1H6 1G7 6C5 4A7 6A3 5B6 4C9 4F5 6E6 4H3 5H5 4G6 6G9 8C4 7A6 7E1 9D4 8E5 8D6 8F8 9H1 8G3 7H7 8H9

152: 2B9 3B3 7D9 4F9 6H9 1H7 1D2 **a16 a18 a21 a97 b1r4 c3r** 2A8 3A6 **cDc fHc a66 pAIc4 u539r4 v1359r4 d7r oAEIc2 t1B8AC a72 g8r a98** 3G8 3H4 4G6 6G7 5B7 **q7E** 2E3 2D4 2F6 8F3 7E4 8D6 8E7 3F7 3E1 5F1 4H1 5H3 6D3 4C3 5D8 9F2 7B2 8I2 5G2 2H2 2G5 4I4 5C4 1B4 1C1 6A1 4A2 6E2 4E5 6B5 6C6 4B8 6I8 8B1 8A4 9B6 7C8 9G4 9H5 7H6 7I7 8H8

153: 3D2 4I5 5I2 7B2 4C2 1A2 8H7 9G3 6H3 4G6 1I6 **a76 a77 bIc4 cEc** 9E5 6B5 8E3 2F3 **cCc d8r a74 a79 oCEGc8 pEHc4 q4B q6C q4F q6D s2Ar s2Ar t9D4Fc u629r1 v1678r4** 3F9 5H9 6A9 1C9 2I9 3H1 2A1 2B7 3C8 3A5 1F7 3E4 2D8 2E6 1G4 5A7 5C6 6C1 4B8 5B4 4F1 6D4 5E8 5G1 4H4 6G8 9A4 8C5 8A6 9C7 9B9 9D1 7D6 7E7 8F8 7F4 8D9 7I1 8I4 9I8 7G9

154: 3G1 2C1 6F1 4I1 8E1 8D6 9E7 1F7 5G6 4A6 1G9 1I4 **a33** 4C3 9A3 **a68 a83 bIc2 cDc c8b h34 cEc** 1A5 1E8 **s7Cr** 3B2 **u537r5 o469r5 q5I** 6G3 8I3 7G2 9C2 8G8 **r48** 5I2 6A2 **p86r9** 4H8 **a69 r58 v4689r9 p73r9** 2A9 2B8 3C4 2E4 3D3 2H3 3H6 2F6 6B4 4B5 5C9 5A8 5E5 3F5 3E9 4D9 5H4 6I5 6H9 7C8 8B9 7B7 7E3 7D4 9D5 7F9 7H5 8H7 9I9

155: 3D2 6A2 5C8 7C6 8B7 9I2 7F2 **a49 a55 a67 a69 a91 a98 dHc f3r h79** 3E7 1D9 1H7 3H9 **a28 o369r3 s2Hr d2r** 2E3 1A3 3B8 1I8 9C3 8H3 **pHBc4 pHBc5** 7A8 **u759r4 v2579r4** 3G3 6I3 **c6r** 4C9 **r18** 8A4 6C4 2B4 1C5 3C1 2I1 1E1 2F6 2D8 3I4 2H5 1G6 4A5 6D5 5G4 4D4 4F1 6F7 5E9 4I6 4G7 6G9 8D1 8E6 9F9 7B9 9B5 7E5 9E4 8F8 7G1 7H4 8G5 9G8

156: 1E1 2I9 7C8 9A9 8F2 7E9 9E3 8I6 5C9 **a72 a77 a95 d1r p24r2 u428r5 uGBEc6 a66 dGc e42r2 j68 bIc4 m6r p15r4 a54 pEAc4 a14** 8A1 **s3Cr** 3B6 1H6 1A8 3A4 3H8 6B1 **f4r t5I7Hc q6I** 1C7 3E7 **a87 oBDEc5 q4B** 5A6 6G6 4E6 6F5 4B5 3C5 2A2 2B3 3G2 1I5 2H4 1F4 6C2 4A3 5F3 5D4 4D1 4F7 6D9 6E8 2D8 2E5 5G1 4H2 6H3 6I4 5I7 4G9 8E4 8D5 9D7 7I3 9I2 7B2 9B4 8B7 7G4 9G5 7H7

157: 3C3 1B4 2A6 7C9 9C6 7D6 6F6 8D5 2G4 2I5 1G3 5I9 1A9 3H9 **a12 a48** 6D8 **a65 a92 bIc5 c6r d9r pGEc1 t6E1Dc fFc u519r1 c4r c4r** 5C4 **o159r1 u914r7 p68r7 a87 v1459r7 a77 q7B** 3B2 3A5 **q4A** 5B8 8A8 8C2 9A1 4C1 6C5 4G5 9B7 7B5 7E8 3F8 9F3 5D3 2E3 2F9 2D2 6E1 1D1 3E7 3G1 1H7 5F2 4A2 5A7 4D7 4E9 4F4 5H1 6G2 6I7 8E4 8F7 8I1 7H2 7I3 9I4 9H5 7G7

158: 1A7 1G6 3F6 2F5 3B5 2H9 5C5 4C6 9E5 9D6 5E6 4E2 8I5 **c6r fDc p68r7 a87 t6B9Ac** 7B4 **o347r3 a23 c2r o247r1 cAc pAHc8 t6G9Hc u816r9 a89 c8b b8r1 h79 dFc e86r8 p28r3** 9C9 1B9 5A9 6B8 6F9 5D7 6G7 9A8 8F7 8D9 9H7 8G8 **q2G** 9G4 **cIc o169r3 r08** 2A1 3A4 2C3 1C2 2G2 3H3 1I4 2D4 5B1 4A3 6E3 1F3 1E1 1D8 4D1 5F8 6I1 5I2 5G3 5H4 4H8 8C1 8B3 9F1 7D3 7H1 9I3

159: 1B2 1A8 9C9 9D8 **a14 a16 a57 a74 a77 c7b eGDc4 uDABc1 dEc** 4E4 5G4 2H4 1D4 7F4 **oABDc1 s1Fr** 2F7 3G7 1G9 3E9 5D7 5F9 **bIc3** 9E3 **b9r1 p24r5 v1249r5**

3C6 **fBc** 5A1 5E5 6E2 **cHc c5r j23 c4r pFIc5 a35 s7Ir** 9F6 1E6 3D1 2C1 3A5 3B4 1F5 2I5 4C5 5C2 4B3 6A7 4H2 5H3 1I3 1H1 6G5 4I7 5I8 6B8 5B6 6H6 8B1 7C3 9A4 9B7 7E1 8D5 9I1 8G3 9H5 7I6 7H7 7G8

160: 2F1 1E2 2I7 2H4 1B1 6D4 5I4 8E4 7A4 **eHBc2 fGc** 3G2 **p36r5 pEHc5 s7Fr u647r5 v3467r5 gCc a43 q4C** 6A3 4G3 6G1 4C1 3A5 2G5 2B9 1G9 4A8 **c5r bIc7 d8r** 8C3 8D7 9B7 **o347r6 pIDc8** 8F8 8A9 5C9 5A7 1C7 2C8 1A6 3D8 3F9 2E6 2D3 3I6 1H8 4F6 5E5 6C5 5B2 6I2 4I5 5G8 5H6 7C2 8B5 9C6 9E3 7F5 7D6 9D9 8H2 9H5 8G6 9I8 7I9

161: 1D8 7E7 9I1 6I7 1G7 8D4 **a21 a25 a95 cAc cGc cDc f5r g7b a76 cAc** 7A4 **f5r b5r9 h67** 5F7 4A7 5A6 4E6 **t3G1Fr o157r3 c3r d1b a19 p83r3** 2E1 **e92r3 q3I c1r r18 u247r8** 3A8 2B2 3I2 5H2 5I3 9A2 7B8 7D2 9D6 7C6 8B3 1C3 1A9 3B1 1H1 2G3 3E3 5C1 5B9 6D1 5D5 8A1 8C5 9C9 9F3 8E9 4F9 6E4 4B4 6B5 5G4 1I4 3F4 1F5 2F6 3G5 3H6 6H9 2I9 2H8 4I8 4H5 7H3 7I5 9G8

162: 1H2 6C2 6I7 4B7 4A3 5A4 7C1 8E7 8B3 2C9 **a41 a49 a78 bIc8** 2G8 **bIc9 o256r1 q5I** 5B9 6B1 **s9Fr u257r6 v2567r6 d1r q9F a26 a36 a96 t4E1FC** 5H5 **p19r3 q1F a93** 7F8 6E8 7E4 **fEc q1I** 2H4 4G4 5I1 4D1 2E1 2F6 1E3 1F5 3E9 3D2 1D8 2I3 1I9 4E5 5E6 6F9 6H6 4H9 9E2 9F3 7H3 9I4 8C4 9C5 8D5 9D6 8A6 3B6 3A8 1A1 3G1 1G6 9B8 9A9 7I6 8G9

163: 3C2 6C6 9E2 6D2 7A7 7C5 1B5 7H2 4G2 **a87 cAc cBc d3r b3r8 d5r b5r1 fDc a59 a86 gFc** 4D5 8D7 **h36** 3D6 2A6 3A3 2E3 5D3 5F8 8E8 7F6 8G6 **p14r1 e62r1 q1A t4F6Ir t6E4Hr uHCFc4 bIc4 o249r4 q2B q4H** 3I8 7G8 7I1 5G1 **a69 r48** 3G9 1G4 2F4 3B4 1E1 2B1 2H7 1C7 2C8 1A9 1D8 2D9 4A1 6B7 5C9 6F1 6E4 4E7 4F9 4H4 5I7 6I9 9C4 8B9 8I4 9I5 8F5 9F3 8H3 9G7 9H9

164: 1H8 8E8 9A8 2F4 1B4 3B2 8A2 4C2 **a29 a36** 5E6 **a43 c8r bIc3 c7r c7r fDc h36** 1D3 3F6 1G6 8F3 8D6 **o358r9 c4r p53r5 t6B4ER u314r5 uHADc5 a95 v1345r5 fGc q9F cEc** 2D9 **h39** 6B3 5C9 6A5 4A6 4B1 4E3 4F5 2E5 1F2 6D7 6E9 5G5 6H6 4I7 2G7 3C7 1C5 2A1 1I1 2I2 3I5 3G9 6G2 6I4 4H9 9C1 7C3 8C4 7A7 9B9 7D1 7E2 9D5 9F7 9H2 9G3 7G4 7H5 8I9

165: 1F2 3F9 3G7 6I2 5G9 7C9 2A9 1H9 9D8 4F8 7D2 3A6 **a23 a46 a86 dHc f5r j34 o267r5 f8r a71** 9E5 6F5 5A5 5F3 7B5 2C5 8H5 9H2 8A2 **h16 t5I8GC v1578r1 t7I1Gc a34 c4r p81r3 a13 q2I** 3H4 3D3 **u916r3** 8I3 2H3 1G1 2D1 1E4 2B4 1B8 1C3 1I6 2I8 5E1 4H1 6C1 4C4 5C6 6B7 4A3 6D4 4D6 5D7 6G3 5I4 9A1 9B3 8B6 9C7 7F6 8F1 7I1 8G4 9G6

166: 1F4 3E2 1B2 2H3 5E7 7A3 6B3 4B4 5D4 5G3 8B8 7F2 **a38 a51 c3r a29 pBGc9 s3Dr u417r9 v1457r9 bIc9** 4C7 2B7 **c4b o257r5 q1C** 3B5 1C9 2I5 3I8 3G9 9B9 **c2r c5r dHc** 9H2 **eHFc6 eECc6 f9b a97 h29** 5I2 4A2 5A9 4H9 5H8 4D8 2F8 2D9 6F6 5F1 6A1 2C1 3A6 3D1 2E6 5C5 6G5 6I4 4I6 6H7 1I7 1H1 7C6 8E1 7E4 9D6 8D5 9A5 8A7 8F9 9I1 8G4 7H5 8H6 9G7 7I9

167: 3B9 4A8 7C1 2B1 2C2 3A3 8C3 7F9 7H3 9G9 2G4 **a16 a31 dHc d8b e85r2 oBFHc5 dDc c2b pDGc5 a35 c3r l15 s6Er uBDHc6 v1379r6** 6G6 **a46 f4r cFc q6E** 3E6 2H6 3I7 8F6 5D6 4B6 4F5 5C4 1A4 1C6 7A6 8B2 6A2 5G2 4G3 5F3 2E3 2F7 2D8 5H7 6I5 5B5 4I4 6E4 4E7 6C7 4C9 6D1 1E1 3D5 3G1 1G5 4H1 6H9 9C5 8D4 7E5 9E2 8E8 7I2 8H5 9I6 8G7

168: 1E5 3G7 1G2 3D2 4C2 5E1 9C5 9F2 8G5 5H5 4F5 6H9 9I6 **a63 a91 a94 o148r1 q3H** 2I4 **pADc4 q3H** 9H4 9A8 9E9 4A9 5D9 **a98 c7r eDAc4 s5Fr t6A5Fr cFc uCEFc3 v1468r3 c2r k867** 6F7 4D6 2F6 2D8 8D7 8F8 4I3 6G1 4B1 5G6 6C6 6I8 3H8 1B8 2H3 1I1 2C1 5C8 6A3 3C3 3B9 1A4 1D3 3E4 5B4 5F3 6D4 8A1 8B3 7B6 7C9 7E3 7F4 7H1 7G8

169: 7E2 4A3 **a14 b3r6** 5B6 6B7 5C2 **a49 c2r** 2F6 1H6 6H2 5H9 **c8r** 8F4 **d1b a11 pAFc5 t7G4Hc** 7I7 **o489r8 q7F c4r** 3E1 **d5b uGAFc5 v2489r5 b3r5 pECc5 a75 dCc**

h58 q7F 5F7 1E7 4D8 5D1 4H1 9D7 7F8 9E9 6F9 3D9 2D2 1B2 1A1 2B5 1F5 3G2 3I5 1I9 1G8 5A5 4C4 3A4 3C6 4B9 6E4 4E5 6G5 6I3 5I8 5G4 2H4 2G3 8B1 9B3 7A6 7C9 8D5 9C5 8C8 7G1 8H3 9I4 9H8

170: 2I4 5I1 4G2 8F1 4B4 8I6 **a77 bIc4 d1b** 1D2 4C9 **bIc2 c7r pHEc7 r38 v1479r7 s2Gr a36 d6r a53 f2r q2B uEBHc8 bIc8 s2Fr d3r dFc oBEHc8 fDc q5E** 4F7 5E8 3F8 1F4 3C4 2C6 1C1 2G1 3G6 2H8 1G7 6C8 6A3 5A5 5B2 2A2 3A9 2B7 3E7 6G5 6H7 5H6 6D6 6E4 4I8 8A7 8B8 8D4 8H5 7I7 9D7 7D8 9G8 8G9 9F9 5D9 2E9 2F5 2D3 5F3 7E5 9C5 8E2 7C2 8C3 7G3

171: 1C2 2H2 1H1 6E2 4H6 9B9 7G2 5I2 3H9 5G9 6D9 4I3 **a87 b6r5** 6A5 **cDc e63r7** 8H7 **a95 o247r1 pGFc8 s1Er** 9D3 7H3 1D6 **t5D4Ar uCDHc4 v1247r4** 9E7 **c4r p69r4 a94 q6C** 4A1 2B1 5D1 4E4 7E1 8D4 **a88 h49** 2A9 1B4 2F4 1F9 7A4 1E3 3E8 1G8 3I7 1A7 6B7 6C6 5C4 5B3 3C3 3B5 5A8 6I4 4G7 5F7 4F5 5H5 8C5 9C1 7B6 8B8 9F6 7F8 8I1 9H4 9G5 9I8

172: 2B7 3H7 9E7 **a15 bIc6 f1r a23 dGc** 9A5 1G3 3C3 9B3 7B9 9H9 1I9 9G2 1C5 6F2 1E2 1F6 7E6 **a71 dCc pCGc8 u829r4 oCDGc4** 8H1 9C1 7F1 9D4 4F7 5F9 8E9 8F5 8D3 2F3 **cAc p15r4 e74r4 r28** 4H2 5C2 4C6 6D6 5G6 6G7 5A7 6A3 5I3 **uGADc8 a98 v1356r8 q4A** 4I1 5E1 2D1 3E8 2E5 3I5 1H8 2C8 1B4 2G4 6B1 4A4 5B8 4D8 5H4 6I8 8C4 7A8 7I4 7G5 8G8

173: 9B5 9G9 **a56 a68 c4r** 4F7 **g1r o258r6 d3r f9r q3H** 1G5 **c6b d5r p35r1 p17r7** 9E7 **a84 t9I2Hc** 1H9 1C7 **uDAFc1 v2358r1 p76r1** 4I1 5G3 4D3 **a51 dEc** 8C8 3E2 9F2 7C2 9D8 7D4 9C4 8E1 7A1 4H4 5H5 4E5 6E9 4C9 2B9 6H8 5E8 6G2 8H2 9I6 2H6 1A6 3B4 2C1 3F6 1F8 1D1 3G1 1I3 2E3 1E4 2G4 3H7 3I8 5B1 6A4 6B3 5C6 6F1 6D6 9A3 8B6 7B7 7H3 8G7

174: 6F4 9A8 1B8 3I8 5G8 4F8 **a34 fDc eHDc5 pCEc5 uFCIc5 a25** 8D5 7I5 4H5 **a63 a82 a91** 8B9 1C9 5C5 6E5 **b6r3** 4C6 8C4 3A4 8A6 **dHc o267r3 pBGc2 p72r7 q7F v3489r2 t5F9Ec q9E** 4D7 1E7 1H3 1I1 1G4 8H1 8I2 6G2 3H2 5A2 2B2 1F2 2F5 1A5 3D3 2A3 3C7 6B3 6A1 5D1 4E2 5E3 5F6 6D9 4I3 5I9 7B1 9C3 7A7 9D2 7F3 9E6 9I4 7G6 2H6 2G9 2I7 9G7 9H9

175: 1A4 3I2 5D1 4I4 9G4 8F4 3D4 4B5 8C2 7D5 **a61** 1B1 **b3r8** 6A8 6B7 5H8 2I8 1D8 **cAc** 4C1 7C9 5B9 **c9r a99 h68** 3B8 9C8 9B6 **j27 c7r o278r7 pFGc9 a39 u135r3 uEDIc3 u135r6 v1357r3 cHc i69 o135r6 q2G p51r3** 3G6 **a33 dFc q2D** 2A6 3C3 1C7 2D3 1F6 2E9 3F7 2G7 1G9 1H3 4A3 5C6 6E3 4E6 6F9 5F5 5G3 6G5 6I1 6H6 4H9 7F3 9F2 8E7 7A7 8A1 9D9 7G1 7H2 9I3 9H7 8I9

176: 1C1 2C3 1F3 2G2 6B1 5G8 2H8 3D8 6F8 6E9 2F9 9C8 9I3 7E3 4D3 5D1 4F6 **a35 b6r2 d7b a74 p91r9 a39 c3r o357r4 q2B** 9B4 **g8r a85 a87 q8H s4Er t1H7Gc t8I1Gc u528r5 s6Cr v1345r7** 6A2 8C2 9A9 3C9 3A6 5C6 9E2 5F2 5E4 2D4 1A4 2B7 2A5 3E7 3G4 1I7 1G9 1H5 6C5 5A7 4E5 6D7 4I2 5I5 4G7 4H1 8B5 7C7 7F4 9D5 8D6 8F7 8G1 8H4 7G5 9G6 8I9

177: 5D5 6E6 6H8 8F8 2D8 1G8 8H6 2G6 1A6 5B6 4F1 9A2 4A8 3E7 9G5 3F2 6D2 7E2 **a54 p69r4 t9C3BC** 3I5 **c4b dBc o156r9 s7Br u158r3 o247r3 v1369r4 bIc4 c8r f7b t1I7Hc uHBGc1** 2I2 5H2 **q5C** 7G1 5I1 6I9 5G4 6B4 5A7 6F7 8C1 2B1 2A5 1C9 3C4 3B8 2E9 1F3 3H1 2H3 1H4 1I7 4B9 5C3 4E3 4D4 5F9 7B3 8B5 9B7 9C8 8E4 7A4 8A9 7D9 8I3 9I4 7H7

178: 2C8 4A9 6E7 4E6 6C6 5F8 4G2 8F5 9E8 8A8 **a45 a51 a64 a82 b4r1 d8r p59r4** 7E4 1F4 2F2 2D9 3H4 5D4 6D1 6F9 4F3 5I1 6G4 **g3b p81r6 a16 p81r7 a17 c1r c2r cGc d1r a12 cBc o248r1 r08 uCEGc3 v2567r3 q2B** 5B5 5A3 7A6 1B6 1A7 8B7 8G6 2I6 2G7 9I7 9H9 1I9 **q8C** 8H2 3I2 1C2 1H5 6I5 6H3 1G3 3E3 2B3 3A1 3C5 1E1 2H1 8C1 4B1

4C4 9C3 9B4 7B2 9A5 9D2 8D3 9G1 7I3

179: 1C1 2C9 5E3 7H1 9H4 4H3 3E8 **a32 a48 a65 a92 bIc8 c3r f5r gFc k142** 7F4 3D4 3F1 5D1 5F2 7E2 2D2 **pEBc5 p14r6 s9Gr uBEHc6 cAc** 7A5 **q8B** 1A4 6B4 **oBEHc6 cIc p76r7 q4I v4679r7 p82r7** 3I7 3G9 1G3 3B3 1I2 2H6 1F6 2E5 1B5 4I6 6D6 5B6 5A8 2B8 2A7 6C7 6A3 6F5 4F7 4D8 4G5 5H7 5I9 9C3 9A6 8B7 7C8 9D5 8E6 7D7 8G2 8I5 9G7 9I8 8F8 9F9 8H9

180: 3I5 1H3 5E5 6I2 4D2 5I3 4G1 9B2 2F1 **a79 c3r** 3A2 1E2 **a27** 1A1 5B1 **cGc a67 f7r oCEHc8 pGBc4 q8G t3F6DC u927r7 s8Dr t9I7DR v1279r7 c6r c6r a44 d5b p69r3** 8B3 9C8 9H6 **c2r q5A** 7A5 7B9 **u437r6** 6D6 4F3 3E3 3F6 6C3 9D3 7D1 7E6 8A6 4C6 4B4 2C4 3B7 1B8 2E8 1G4 2I7 3G8 2H9 6B5 5A7 4A9 5H4 6F4 4H5 6H7 6G9 7C7 9F7 1D7 1F9 5D9 5F8 8D8 9E9 9I1 7I4 8G7 7H8

181: 4A6 9H2 5G2 8I7 9I1 5H1 6H4 9C6 3G3 1G1 2B1 3F1 8E1 2E4 **a39 a42 bIc3 c6r c2b d1r o357r5 pDAc7 a17 d2r h27** 2F3 8D3 **s4Er** 4D2 1F2 2A2 1A7 2D7 6B2 **uDAGc9 pAFc9 a59 cDc a88 c7r h79** 6C7 5F7 6F9 2C9 1H9 **r18 v1246r8 q4H** 4B3 6E3 5I3 4H5 5D5 1E5 3C5 3A4 1B8 3D8 4E8 6I8 2H8 2I6 8B5 9B4 5C4 5A8 5B9 7C8 8A9 7D4 8F8 7F6 9D9 8G4 7I5 8H6 7G9

182: 2E4 2G8 1A8 2A3 2I2 6I7 6H4 8C8 8A4 5C4 9I4 9B6 **a61 a62 a65** 7G3 **a99 c2r c9r d9b h69 cIc o357r7 pHFc5 t2D1Ir uACIc1 u457r2 u657r2 v1289r1 dEc eIEc5 a15 q9F** 6F3 5E2 4D7 5A7 4E8 6E6 9D8 9E9 5G1 6G2 4G5 6C5 6A9 7A2 4B2 8D3 1E3 8E1 7C1 4A1 4C6 3A6 1I6 2D6 1D9 3G9 2C9 8B7 3C7 1F7 2F1 1B1 2B5 3E5 3I1 1H5 8F5 9F2 7E7 9H1 8H2 7I5 8G6 8I9

183: 1D6 3G9 6B4 5H6 8F9 7C9 2B9 7G4 **a21 cBc c5r d9b g8r h27 dFc** 9D4 **a88 o678r7** 2C7 **p93r5 a15 s1Gr s4Er cEc u427r8 v2678r2 f4r gIc a63 o247r8** 9A6 3B6 3C5 8B5 9I5 2H5 1F5 2F4 1A4 2D3 3A3 1C1 2A2 2E1 3I1 1G2 1I3 2I8 4A1 6C8 4F3 4E5 5D8 6D1 5F2 4B2 5B7 6E7 5G1 6H3 6I2 4G7 4H8 9C2 7A8 8A7 8D2 9F7 8E8 8H1 7H2 8G3 8I6 7I7 9G8

184: 4A3 6I2 2G2 1F2 7B2 4G8 8G6 7G7 **a49 a78 c8b** 8F7 8D5 **d5r a54 e94r5** 3C5 **oBFGc4** 5I4 **p35r7 u178r9 a29 v1568r1 c2b gEc q2F** 5B9 6C7 1D9 6D4 **t2C1Hr** 3G4 9G1 **a31 q4B** 5A6 5H1 **q4I q8A** 6A5 4B1 6E1 2F1 1E4 2B4 3B7 2D7 3E3 3I1 3H9 4E6 5E7 5D8 4F9 4I5 6H6 2I6 9B5 9D3 9F4 9E8 7E9 8C9 8A1 1C1 2C3 1A8 1H3 2H8 7A4 7C8 8H4 7H5 9I9

185: 2G9 6E3 6F9 8D9 3E9 9D3 8G3 6G1 7I1 **a47 a55** 3D4 **a62 a77 a94 b3r2 dIc f1r h34** 1C3 2B4 2I3 1I4 **p76r5 q5I** 6H8 1G8 1D7 5E7 7F7 **b6r5 t8B4Cc s7Ar u812r6 o349r6 uDBFc8** 4E1 2D1 **v1267r5 q3I** 5I2 5D5 4D8 5A8 9B8 7A5 6C5 3B5 3A2 2C6 1E6 3I6 6A4 4G6 4I5 9A6 8A1 9F1 7E8 2F8 1F5 2E2 1H2 2H5 8F2 9C2 4B2 4C7 8C4 8B7 9E4 7H4 9G5 8H6

186: 9A6 7E8 5A9 5B4 2A4 6F9 7F4 2B3 7C3 2C8 **f4r fDc eIDc1** 5C1 4E1 **h38 fGc** 8G4 **oAFGc5 dBc a17 a47 pCEc2 s7Gr s2Hr t2F8Dc p86r7 uICDc2 v2479r2 a62** 1D2 1H4 1C7 1I5 2F1 3I1 3G3 3H8 5I3 4D3 5D8 6I2 4B2 4A7 6C5 3B5 3C9 5E2 6E6 6D4 3E4 3D7 5F7 4F5 5G5 5H6 2G6 2H2 6H7 4G8 8C2 7A5 8B9 8D1 9F2 8E7 7H1 9B1 7B7 7G2 8H5 8I6 9G7

187: 2E5 1E7 1H3 6D3 4I3 9F9 2D1 1F4 2I6 **a38 c3r cEc** 9E4 9I8 3H8 **c8r r48 a72 r48 t3G7HC f4r cHc d5r p84r5 uABGc9** 4C5 8A5 7A3 8E3 7E1 8G1 3I1 3G4 4H1 5B1 6I4 4B4 5I7 7H4 9H5 6G5 7G6 9C7 6B7 **a49 oCEHc6 v2356r2 a12 q4A** 4F2 5E6 1D6 3C6 2C2 1B9 1A8 3E2 1G2 2H9 4A6 6C8 5A9 6A2 5H2 6H6 4G9 7B8 7C9 9D2 8B2 9B6 8F6

188: 3F5 6E4 3G3 **a22 a48 a82 a86 d6r a67 b6r2 b6r6 cFc c5r d9r a74 cAc h672**

6A7 6C6 6B2 8C2 9B7 9A6 7F6 5E6 5F2 7D2 3E2 **o167r9 q1C q5G** 4G2 2H2 **r08 u938r1 uICEc1 a61 v2389r1 pDHc1** 2G1 2A9 2B5 3D9 1F1 3B1 3A4 1B6 1C8 5B8 4A3 5C5 4E1 5D3 4D8 6F9 6I1 5G9 5H4 5I7 1H7 1I9 7C1 7B4 8B3 7A5 9D1 7E8 8H1 7I3 9G4 8I5 4H5 4I6 3H6 3I8 9H8 7H9

189: 2A2 3C6 4A3 8G6 5H6 6E6 9G3 8F3 1E3 2D4 **a44 a89 o357r8 f6r p24r7 p68r7 p35r9 q1B** 6F8 3E8 4F4 6C4 9F9 **a27 t7F9Cr pCEc5 s7Gr t8I4GC uHBEc7 v2468r7 q3A** 3D7 3A1 3I9 3H4 6G9 4D9 7I4 9B4 **a51 c5r q4G q7A** 6A7 4C5 7A5 7B8 5A8 5B9 1C9 2C8 1B7 2G7 1G8 1H2 4I7 6I2 4E2 5E1 6D5 1F5 1D1 4G1 5I5 8C7 9C1 8A9 7F1 9D2 9E5 7E7 8I1 7G2 9H7

190: 3F7 1G4 9I4 7G9 5D1 6G1 2I3 4I7 7F3 6E3 1D3 **a28 a29 bIc5 cFc** 9E1 8C1 9C3 8H3 **dAc a16 c7b p15r6 p91r7 t5F4HR u258r2 uDAIc6 u259r7 a37** 5C7 **cBc c6r e85r4 o367r2 v1589r6** 4E5 **b1r5 c1r uGBFc8 q2H** 3I6 2C6 1E6 2H2 3D2 2D5 3G5 2G7 1H8 4D6 6A6 5B2 4C4 6B9 3C9 2B8 3E8 2E9 4A8 5E4 5F9 6F8 6I2 5G8 5H6 4H9 7A2 8B4 7C8 8E2 7D4 8G6 9F6 8F5 9B5 1A5 1B7 8A7 9H7

191: 2A5 2D1 1G2 6C6 9C7 9G5 4I5 6F5 1E5 6A7 7F1 8F6 7I6 1H6 3D6 5D2 4D3 7G3 **c9r c8b h23** 9B2 8E2 9E3 **pEHc7 a67 cHc r08 b2r8 b2r9 uIAEc4 a34 c2r r48 t5A1Bc v3578r9 a19 q1B** 4C1 5H1 4H7 8B1 **o249r8 q6D** 6G4 5I9 6D9 1F9 2E7 3E4 1B4 1D8 2I4 1I7 3I3 1C3 5A4 5B3 6B8 4F4 5F7 5E8 4G8 2H8 2G9 8A3 9F8 7E9 8C9 3A9 3C8 7A8 8I8 9H9

192: 4D4 6F9 8A6 3H6 4G6 5E6 2F6 4I9 **a52 a53** 9E1 3D1 **a87 b3r8 c4r f2r h23 pCGc1 c9b fIc a65 pIBc4 t1F2Ir t4B3Ac c5r d6b e85r4 r08 c9r cAc oBFIc2 u329r3 a13 cBc q1F** 1E8 2G8 7H8 **eHBc7 s7Br** 6A3 4B7 3A7 1B5 2E5 2D7 1F3 2I3 3I5 1H7 1I1 5A5 6C1 5B4 4C2 2A2 2C4 6E2 4E3 5H1 5I2 6H4 4H5 6G7 7A1 9A4 9D3 7B3 3C3 3B8 8B2 8C8 9B9 7F2 8F5 8E7 8D9 8G1 9H2 8I4 7I7 7G9

193: 1E2 1D5 1I8 6B5 4B6 9G5 8E5 **a42 a64 a78 bIc8 d4r** 4C2 **a67 a47** 2G7 6H7 9H6 **b2r4 cGc h34** 1H1 **oAEIc3 a73 fFc e73r1 fDc s9Cr t8A9Er b7r9 p84r9 u425r9 v2458r9** 8D9 8F6 9F7 7D1 9A1 3B1 8A3 9C8 4A8 5A7 6C9 2A9 3H9 1G4 3C4 1C3 1B7 2I3 3F3 3D8 4D7 6E8 6F1 2E1 2D6 2F4 5F2 5D4 5E6 4E9 4H4 4G3 6I6 6G2 5I9 8B4 7B2 8C7 9B9 9E3 7F8 8I2 7H3 7G9

194: 3B6 2D9 2G8 3A8 4A2 9D2 3D4 **a71 b5r9 f4r pAIc1 s7Hr t6G8Ic** 5G9 9H9 **p38r3 b7r3 t3C9BC u439r1 v3479r1 b6r1 q8I** 5H8 8E8 6H1 2I1 3C1 1E1 9B1 5A1 3F3 9E3 8C3 2B3 7I3 **c5b** 4D1 7F1 **b4r5 o149r5 r48** 8A7 9C5 4B5 2A5 1F5 2E7 6B8 6D7 5B7 1C7 1B4 6C4 4C9 5E5 4F8 6F9 5I4 6I5 6G2 1H2 1G3 4H3 4G6 7D5 9F7 8F4 8I2 9G4 8H5 7H6 7G7

195: 4A1 6C9 5E1 1D1 4H9 8D5 9H4 4G4 **a57 c4r cFc d7b** 8C8 **a48 b1r8 pCGc5** 6I5 **cGc c2r p71r7 q1B t5C9Bc t4I1Hc e71r7 uECGc3 a23 c3r v3469r2 p28r2 a92 dEc o247r6 q3D q1E** 1B7 3H7 2I2 3D2 1H6 2D6 2F7 2E4 3F8 2A8 3E9 1E3 1I8 4F2 4D3 6D7 6F4 4I6 6A6 6B3 5C2 5B5 4B8 6H2 5G7 5H8 9B2 9A5 2C5 3A3 2G3 3G5 7C3 7B6 8A7 7E2 9F3 7D4 8E6 8F9 7F1 8I1 8G2 7I7

196: 4E6 6E7 7H4 6I4 9I6 5C7 5A6 6B8 4G7 7C6 8E5 9B5 9A1 **a49 a51 a63 c2r fBc pCFc2 t9C7Dr** 8I3 **b2r3 m3b pGDc9 q5G u159r8** 3G3 **v2478r9 a69 d3r o378r8 q6F** 4D4 **a52 q6F** 6C3 4H3 5G5 1H5 3H6 1B6 3B1 2E1 3F9 1F4 3A4 1D3 3E8 1I1 2I7 1A7 3I2 1G8 2H9 4F5 6F2 6D9 5D1 5F8 6H1 5I9 8B7 9F3 9D8 7D2 9C2 7E9 8A9 4B9 4A2 2B2 2A3 7B3 7A8 8H8 9G9

197: 3F1 4I1 1H1 5I7 2H7 1A7 4D7 7A1 8B9 7F7 9C7 4C4 5F4 3D9 2I9 **a32 a33 a46 p41r5 pFHc5 q1E s8Dr a85 p37r5 pHAc5 u914r3 v1347r5** 9B2 2A2 **a82** 5D5 8F5 5A6 **cCc c5b k239** 5G9 6E9 5E2 6C2 5C3 6G6 **pCGc8 s9Hr c9r o149r3** 6I4 **s7Gr e73r8**

cGc c9b e73r5 q1E 8H3 4G3 1I3 3G8 3I2 1G5 3C5 6F3 2D3 1E6 2B6 1B8 2F8 6A8 4B5 4E8 6H5 9A5 8A4 7C8 9E3 7D6 8D2 7G2 9H4 7I5 9I6 8I8

198: 3F1 2D6 2F7 4B6 5E8 6A8 4I1 6D1 5I7 3G7 6B7 8A1 7A7 8D7 4F9 9D4 5F4 9C6 5D3 6H3 4G8 **a62 a65 p91r5 a35 r18** 7C9 **t8G7DR oBDHc5 u329r3 v3457r2** 1A6 **s2Ar cAc a19** 3H6 8I6 **d2r e92r3 q8G** 8E9 9I9 2H9 2I8 8G5 1I5 3I3 2A3 2C5 3A2 3B9 1F3 2E2 1G2 6C2 5B5 5A9 4D2 6F5 5H2 4H5 8B3 7B4 9A5 8F2 9E3 7D5 7I2 8H4 7H8

199: 4B3 4F9 5I3 8I5 6H5 8G4 4I4 8E9 5F5 **cBc c8b dIc a96 d7b** 7H9 **h25 pICc2** 7B2 7A5 3B5 2E5 **t8D6FC u179r7 fAc o268r7 v2468r6 cFc pFAc6 a46 d2r eICc2 e72r3 q3F** 3A4 1H4 2D4 3F3 1C3 3C8 2A2 1D8 3I2 2G3 1I6 2C6 1A7 1B9 3E6 1E1 2F7 3H1 6C2 6A8 4A6 5A1 5E4 6D7 4D1 5D2 6F6 6I1 4G2 9B6 8C7 9A9 7D3 8D6 7E7 9F8 9G1 9H3 7G6 9I7 7I8

200: 3F1 8E2 9E3 8F8 8I3 4A3 **a36 a38 a84 a87 d3b oAFIc4 fBc pFBc7 s6Ir uBAIc7 v3478r7 d9r a71 a78 d2b a25 fEc o348r5** 1C9 2C2 6C6 **bIc9 q4E d6r** 5E8 6E9 2D9 5I9 **q8C c4r h16** 4H6 5D6 4D1 6G1 5H2 6A2 6B8 7G2 7H8 9C8 8C1 9H1 9G9 3H9 8H5 **q3G** 6F4 3E4 2A4 1A8 1B1 2F7 3C7 3B3 2B5 1E5 2E6 3G5 1G6 1I7 2G8 5A1 4C5 5B7 5F5 4E7 4G4 6I5 7C3 7B4 9A7 8D4 7D7 9I4 8G7

201: 3D1 1A1 2D4 2H2 4E2 7I1 9G2 8A2 5C2 8B9 1I3 3I4 1C4 3H5 5G3 7B4 **a97 cHc d7r dFc d8b e52r9 f4r h17** 4B1 6H1 4H7 **t5H4Dr cDc pDBc5 u367r7 x6 eIDc6 bIc6 x8** 2I9 3C9 5A9 4G9 6F9 6D3 4F5 5I5 6B5 7F3 9D5 7A5 **oCEGc8 a18 q6E a17 r38 o367r6** 2A8 **r38** 1F8 2F6 3A6 3B3 2B7 3E7 1H6 3G8 5B6 6C8 6A7 4D8 6E6 4I6 5H8 9A3 7C7 9B8 8D6 8F7 7E8 7G6 9I7 8I8

202: 9F7 9D2 6F2 5B2 **fCc o347r3 cAc p58r4 u259r6 uGCDc6 v3467r1 c9r t2B7CC t8H7Dr c8b x9** 9C9 7D9 9E5 4D5 8H9 **d2b** 2C4 1C2 **s4Cr** 6C7 6A9 4A3 8C5 **b6r1 q9H** 5H5 9H6 9B1 9I8 1H1 2B3 1I3 3F3 2E1 3C1 2A6 1E9 5A1 4C6 4F1 6D8 1F8 3A8 1A5 1B7 1D4 3D6 3G5 1G6 5E4 5I6 4G8 4I9 2G9 2I2 7C3 8A7 8B8 8E3 7F4 8G2 8I4 6G4 6I1 7G1 7I5

203: 1C6 2B9 2G8 5H3 4C3 **a12 a14** 3I7 **a25 c3r d1r a24 f5r** 1D5 1E9 1F7 5D9 5E8 **dEc x7 m9b c7r a87 s9Fr t9G8DR pDIc6 a96 c7r u617r4 oEGHc4 dFc x2** 4E7 **p49r2 q8B f9r e94r2 q4B q8F** 7E4 4D4 2F4 3E3 2A3 1A2 3A1 2D1 2H2 9E1 8F2 6E2 9B2 5C2 4I2 9F3 7D6 9D8 8D7 7A7 5B7 6A5 4B6 5F5 6F6 5G6 9C5 3B5 3C4 8B4 8C9 8H1 1G1 1H4 6G4 6H7 7G2 9I4 7H5 8I6 9G7 7I8 9H9

204: 3B5 2H4 3C4 5D3 6H7 8G2 3E3 5I5 7E5 4D5 9H5 **a61 c2b e72r7 p84r4** 5A4 **fBc a73 pDBc1 c2r bIc9 p38r6 u438r6 v1348r6** 9E4 4F4 8B4 9B7 **t6E4BR x6 x9** 4I1 7H1 **oBEHc9 q7G** 9D6 4E6 3F6 1E9 3I9 6E2 4B2 1A2 1C8 6B9 5F9 5G6 6A6 2C6 2A9 5C1 4H9 9A1 7A8 9C9 8C3 8F8 6D8 6F1 2D1 1B1 2B3 1F7 1H3 1I6 2G7 7D7 9G3 8H6 8I7 9I8 7G9

205: 2F9 1I5 3G7 2G3 5H7 8I6 9H9 6I9 4B9 8C9 1C7 3C3 **f5r** 6D8 **o267r2 t6C5Gr cAc uGAFc1 a91 x4 q6C q5I** 5G2 6C2 4D2 2E2 1B2 7A2 2A6 9B6 2C8 3I8 **a55 c7r eEBc4 q1F** 5F6 5D3 1F3 7E6 3D6 **r18 v2356r1 q8E a78 c8r q9D** 9A7 7C5 5A5 5B8 4A1 3B1 1A4 1D1 3E4 5C4 6E1 4E5 4F7 5I1 2H1 2I4 4G4 6H5 8B4 8A8 7F1 9D4 8D5 8E7 9F8 8G1 7H4 9G5 7G8

206: 1C5 6D5 4F6 1E6 4D2 9G5 4H7 5C7 3H3 **a49 a64 bIc8 t2E3CR** 2F7 1G7 9D7 7A7 **a14 gGc a93 uADIc8 v2467r8 x1 c8r** 8A3 1B3 **cEc j34 o359r1** 8C6 9I6 3G6 7I3 **s7Fr s5Fr a53 dFc x8** 7C4 **q7B** 6B9 **a48 h38** 4G3 6C3 4C8 5I8 2G8 1A8 3A4 2C9 3C2 2B1 3D1 1D9 1F4 2E2 1I2 3I9 5F1 5E3 5D4 6F8 6G4 5G9 9C1 7B8 9A9 8E1 7F2 9F3 9E4 8D8 7G1 8G2 8H4 9H8

207: 1E3 4E2 4H3 6H4 8A3 2H2 8G2 2D6 8D1 9G1 **a68 a74 cFc c2b p24r1 p15r7 r08**

u417r5 x1 f7r dBc bIc9 e42r1 1C4 **pDAc9 d4b o268r8 s3Gr t9D7Cr pCEc7 s5Fr b4r5 q6D a37 b5r7 c3b** 7H5 **q3I** 7I8 5H8 4I1 1H1 2C1 3A8 3B2 1B9 2F8 3E4 2I4 3H7 1F7 3D5 1I5 3I6 3G9 5F5 6A5 5A1 4C9 6E1 4F6 6B6 6C8 4B7 5E7 6D9 4G5 6G7 5I9 7B1 7A2 7C7 8B8 9B4 9A9 8F4 9D7 9E8 7E6 7F9 9H6

208: 2F7 3I9 5E3 6F4 3D4 3E6 5G7 9B3 9E7 8C7 4A7 7F8 5D6 2B4 4I3 **a78 c3r d7r** 7C4 9I4 1H4 **a92 a82 dHc d1b p84r1 p84r9 uGAHc5 a35 x2** 7D2 **e76r9** 2C9 **bIc1 t6B4Hr oACHc2 v1267r1 a61 q4D** 4C2 5C1 6A5 3C5 1A8 1G5 3G8 4B9 6B6 4D1 6E9 5F2 1E2 3F1 2A1 3B2 1I1 2H2 2G3 6G1 6I2 5I5 4H6 6H8 8B1 9A2 9C8 7A9 7E1 8D9 8G2 7H3 8H5 7G6 8I8

209: 7B1 8B2 7A6 4B6 4A8 9I4 8H6 7G8 7H7 8D5 **a51** 9D1 9E8 **a53 a62 c2r cCc** 9C5 **fEc r28 cHc g3b m3r t3D2Br uAEHc5 pHBc5 a45 s3Hr i56 c3b v4578r3 x9** 3B9 2G9 3H5 1E5 2A5 3E6 1G6 3G3 **b5r9** 4E1 6I1 2H1 3F1 1F7 3C7 2B4 1B8 1A3 3D4 2D8 2F2 1I2 3I8 5C4 6A7 4C9 6B3 5B5 6E4 4H2 4I3 6G5 5G7 6H9 7C3 9A9 8F3 5D3 5E2 5F9 7D2 7F4 7E9 9H3 8I9

210: 7B8 7D1 7G4 **d4r a61 b4r5 b4r7 cFc** 8F5 **d5r a69 cDc pBHc2 p62r4 x3 cBc o258r1** 4C7 **h15 s3Cr** 3A7 **q1D u528r7 a57 q3H w9C2 x2 q9F t8E9CR a73 d9r a96 q9I f3b a32** 9F2 4E2 5E8 5D7 2E7 2D6 3F4 3E3 1D5 3B5 2C1 2B4 1A2 1C3 3C8 3I1 2G2 2H3 1I7 1G8 3H9 5C4 4A5 4B1 5B9 6B3 5F3 6D4 6E5 4F6 5G5 5H1 4H8 9A1 8B2 7A3 8E6 9C6 8C9 7E9 8G1 7H2 9I3 7I6 6H6 6G7 6I9 8H7 9G9

211: 9D8 9I9 7I2 5H2 **a53 c7r d3r d1b a13 o367r5 p28r2 p24r8 x1 x6** 2D3 5F3 2G7 **bIc6** 2H6 2B8 1A2 2E2 **t1G6Ic t5I4AR** 8D4 **q8C** 1C6 3F6 **pGCc1 uFDGc1 v3467r1 a81** 1D1 1F7 **c5r** 4B9 5B7 **cAc** 9C4 **q9A** 9G1 8F1 7A1 3B1 3A3 5C1 6B5 5G5 3I5 1E5 3D9 3H4 1H9 1I8 1G3 5E9 5D6 5I4 4A4 5A8 6E4 4E1 6H1 6I3 4H8 8C5 9A7 9F2 8B2 9B3 7B6 7D5 9E6 8E7 8H3 7H7

212: 6C2 1A2 1C3 8A3 7H2 7G3 8G7 3H7 **a11 c1r** 3F4 6E4 4E3 6H3 **dEc a59 o167r1 p82r8 uAEIc6 uBDFc9 a19 s7Fr x8** 8C8 **c2r c7b x5 x5 a95 x8 fIc** 5G9 **b5r5 e52r8 v2589r5 c3r** 2I6 3G8 2A8 9H8 5I8 7I1 1G1 1I4 4H1 9E1 6D1 4D8 6B8 4F9 6F5 5E6 4G5 6G6 8E5 3D5 2C5 1B7 3B9 2E7 1E9 5A5 5C1 3A1 3C6 4B6 4C7 7B5 9A6 7F6 7D9 9C9 7C4 9G4 9I5 8I9

213: 1A4 1B8 3D5 3G2 1H1 3F1 2I4 4C1 6D8 6F4 4F2 4I5 7A5 6B5 8G1 7I8 2C2 **a23 a37 a39 cEc eIEc3** 8A3 3B3 **pIBc6 vCEGIc7 q2B a46 t6A5Hr u816r6 t1E8Fc x7** 4B6 **dHc oEFHc6 dDc q7H q8F** 8D9 8F7 1E7 1F6 2F9 3A9 3C6 2B7 2D3 3I7 1I9 5A7 5B9 6A2 5E3 5D1 6E6 4D7 5H2 4H3 5I6 6G7 6H9 9B2 9A6 7C7 9E1 7F3 7D6 9D4 9I3 7H4 8H6 9H7 7G9

214: 9B8 7F5 8E6 7D7 9G7 3F7 4E7 **a82 a89 b4r5 dFc f6r h26 p53r8** 2F8 **q1F** 2G2 3B2 5C2 6F2 5F6 6B6 9A6 9C5 4A5 9H2 8D2 9D9 **pAGc3 pFBc9 q3D bIc9 q3A t4F5BR c5r u145r9** 2I7 1C7 1B3 **b1r4 x4** 5E5 6G5 **eGAc3 q3D** 4H8 3G8 5D8 **q8C** 7B4 **a71 s6Hr oBFIc9 q5G q3H** 1I6 3H9 2C9 3A4 2E4 1F9 3D1 4C4 5A3 4F1 5B1 4B9 6D4 4D3 6E9 6I3 6H1 1G1 1H4 5G4 5I9 7C3 8C1 8A9 7I1 8G3 7H6

215: 5C3 6G3 4H4 5H7 6B7 7H3 8E3 3F3 3C6 3B4 **a69 a95 bIc2 dAc** 5A6 7B6 8B5 7I5 **a78 g2r o346r2** 9D2 **pBHc9 u369r1 x1 c8r h17 u248r9 v2458r9 b7r9 q8I a61 c3r eGFc1** 8A1 7A7 8D7 2E7 1E6 2H6 3H5 2D5 1G1 5E5 9H1 7F1 8I9 5G9 1H9 2A9 4C9 6I2 2G2 1F2 3A2 1B8 2F8 2I4 3I8 5B2 4A8 4E2 5D8 6E1 3D1 3E9 5I1 9C8 8C4 9B9 7E8 9E4 7D9 7G4

216: 3C5 2I2 1G3 2E3 1I5 3G9 6A2 4C3 9C1 2B1 2C8 1A7 7F5 **a16** 5C6 **d9r fEc h28 f8r pFIc7 s7Er uIAFc9** 4H8 6B8 8G8 9E8 8E2 9H2 5G2 **o367r7 x4 q7C q7E e92r4 t8I7Cr** 8H3 7D3 **x9** 5H5 6E5 **q4F q6C s5Ir b4r9** 5E4 **cEc e76r4 q1D** 3E7 9F7 6D7 4E1

1D1 3D6 1B6 2A9 3B4 2F4 1E9 6C4 5B9 4B7 4F9 6G1 4I4 4G6 5I7 6H9 9A4 8A6 7C9 8D4 7E6 7G4 9I6 7H7 8I9

217: 1I4 5H4 5I9 9A4 8B8 1A8 8E4 6D4 9G7 8C7 9H8 8I5 4C5 5E5 5F2 6F7 7H1 9E1 9F9 **a92 c4r a63 a43 bIc6 pICc1 q5B r28 r28 uAFHc6 x6** 1D6 **o248r6 t7B2AC v1367r3** 2G2 **t1G3CR x6** 3B6 2H6 4A6 5A3 5B7 3A7 1C2 3C3 1B1 2B9 2A5 3E2 2D3 2E7 1E9 3I1 1G3 6C1 4F3 6E6 4E8 4D9 5D1 4G1 6I3 6G8 7A2 7B5 9C6 7E3 8F6 9I2 8H3 7I6

218: 1G6 1I2 7I4 6E2 9F2 6C7 5C4 4E4 **d5b d6b fFc bIc8 h67 u734r3 x5** 4G2 5A2 8H2 9H6 7G5 2C6 **fDc r18 t7D5Ec o589r3 c7r l67** 7B6 8A7 2B7 3I7 8D6 5F6 5D7 7F7 **a71 v1267r8** 8G8 8I1 5G1 5I9 3G9 9I3 **p29r9** 8B9 7A3 5B3 4A5 1B5 4F3 3D3 1D4 3A4 2E9 1A9 6D5 5E8 5H5 2I5 3F5 2F1 3C1 2A8 1F8 3H8 6I8 9A1 9C8 8E3 9E5 7D8 9D9

219: 5A5 6B7 9A7 9D3 8B3 8E6 2A2 3H2 **a35 d3r dIc a66 d1b** 1I6 2D6 8I5 2I1 2H4 **fCc p67r2 t5I6Fr eGFc2 uFAGc4 pDCc4 q7D bIc4 c1r o167r9 q8F r48 x1 x8** 9H1 8A1 1E1 3D4 1A4 7D1 4D8 **a74 cHc cCc h35** 4H5 1G5 1H3 5G3 4C3 5C4 4E4 5H8 6H6 5B6 3C6 3B1 6C1 4B2 4G1 5I9 6F9 2E9 1B9 2C8 1F8 5E2 6G2 9C9 7F2 7E7 3F7 3E5 9F5 8F4 9E8 7B8 9B4 9I2 7G4 8G8 7H9

220: 1B4 2B2 8G9 2I9 3E9 2H3 1I7 4F9 5C9 **a11 a52 a53 dHc a36** 5I6 6I4 5A4 **u956r3** 8F3 8D2 1F2 **uCFIc5 x5 x5 x8 c4r e74r3 q4A r38 oCFIc5 w8A8 p92r8 a28 q1C t1E9Dc q9C** 9A3 4C3 7I3 9G5 4I5 **a45 s7Cr** 6B8 6A1 5B5 4A7 5H7 4H8 5G2 3H2 4E2 6G3 5E3 8B7 7B1 3A8 2C5 1C1 2D1 3D5 1E6 2E7 2F8 3G6 1G8 6E5 6D7 8A5 7F5 9D6 7C6 9C8 7E8 9E4 8E1 9H1 7H4 8H6

221: 2C3 1G3 6B7 8H5 7G6 9C6 8G8 5F7 **a15 a26 a42 a78 d4r a44 d6b a63 p26r2** 5I2 6H9 7I9 4I3 **d6r f7r r28 s2Br b1r1 x4** 5E9 **t7D4FC o149r1 a31 gEc v1248r4 x4** 2B4 2A1 1F4 1E1 1D5 3F9 1B9 3G4 3I1 3H7 2H2 3E2 2E6 6F2 6E3 4E5 6A5 3C5 5A4 4B6 3A6 3B8 4C2 6D4 4F1 5D6 4D8 6G1 4H4 7B2 8B1 7C4 7A8 7D1 9F3 8E4 7E7 9E8 9D9 9H1 7H3 8I7

222: 3C8 2I3 5G7 9D8 6B3 8C3 5B8 8A8 8B7 **a76 c6b** 6G1 8H1 7E1 5F1 **eIFc5 p68r6 p68r9** 9F7 **dEc bIc6 t6I9GC u259r4 u317r4 o259r4 v3689r9 x2 x6 q1H** 3G4 1F4 2B4 1D6 3E2 1E3 2E7 5D3 6F6 4D9 3F9 2D5 3I5 5E5 4A5 4C7 1A7 2A2 1C9 1H2 2H9 2G6 5A9 5C6 5I2 5H4 4H6 6I9 9B2 7C4 7A6 7D2 8F5 9I4 7G5 8I6 9E6 8E9 9G9

223: 2B9 5A4 6E9 9D3 9E8 7E1 7F4 1E4 2G4 6D4 9H4 **a22 p67r3** 8G3 6I3 4B3 7C3 **pDBc8 t2C5Bc** 8A8 **x5 x8 d3r a17 cBc d3b eDBc8 r48 v1268r5 cFc s9Gr d9b bIc7 uAFGc6 a16 c4r** 4D1 **h67** 4G7 5F7 4F6 1G6 3A6 **q5B** 4A2 5D2 3E2 1F5 3D8 2C8 3B5 2I5 1I8 6C5 5C6 5B8 4E5 6F8 5G5 6H6 7B2 1C2 1A1 1B7 9A5 9C7 8C1 7A9 9G1 8H5 7I6 7H7 3I7 3H1 5I1 5H9 9I9

224: 3C4 1E8 6B8 6D4 6F5 4I6 7B6 7D2 9E6 8C8 **a29 cAc c9r** 9F8 7H8 **pICc2** 3A2 **t6G3Hc f3r x1 x3 c5r** 4F9 3E9 **oEFHc1** 5C2 4H2 9G2 2I2 9H5 **p82r3 r08 uFCGc7 uBADc7 v4689r3** 2F3 **cDc h56** 3G6 2D6 3D5 2C5 2G7 7C7 8A9 5B9 1C9 5A7 8D7 3F7 1B7 3B3 1D1 3H1 1I3 1G5 5E1 4D3 6A3 4C1 6G1 5H3 5I5 5G4 9A1 9C3 7F1 7E3 8G3 7I4 7G9

225: 1I3 3I6 6G8 9I5 8H7 9C7 5B5 4B9 6F5 3E5 1A5 6H9 1G9 7I9 **bIc8 c7r gFc pGAc2 a12 cBc pAEc6 q9F f5r bIc8 s3Cr uEBGc1 u269r4 v2679r4 b5r4** 4I1 **a41 a51 a91 c9r** 2F3 5F7 5E9 9F9 **e96r4 o279r1 q2G d1b pCDc8 a58 q4C cFc** 9E1 8E8 9B8 8B2 7G1 8C1 2B1 3C4 2G4 6A4 5A1 4C8 3A8 2A2 1C6 1D2 1F8 3F1 1H1 3H2 6D1 4F4 4D6 2E6 2D7 5D8 5I2 5H4 7B4 7A6 9A3 7D3 9D4 8F6 7E7 9G2 8I4

226: 2C7 3C9 2D5 5B7 5E2 4G7 8F4 5I5 **cEc c4r c6r cIc pIBc3 p68r9 a89 t6G9Hc u869r6 x6 x6 x8 x8 c8b** 7D7 8I7 **f9r e96r6 s5Dr oADEc8 c4b bIc4 eIBc4 q8A** 4A5 4C2 3A4 **a72 dCc a11 q1C** 3B1 3G5 **a33 d3b x3 b8r3 q5C** 8C1 8B3 5C3 6B4 4F3 3E3

3F6 6D6 5A6 6C8 2A8 1B2 1C5 1F8 2F1 2E9 2I2 5D8 5F9 6I3 4H8 6G9 8A2 7C4 9B5 9C6 9D3 7E6 8E8 8D9 7G2 7H3 2G3 2H4 5G4 5H1 1G1 1H6 7I1 9I4 8G6 9G8 9H9

227: 2D2 2F4 3E9 1E3 6E2 4D4 5D9 6G4 7A4 9D3 9I4 9E7 8I9 **a21** 5E1 **a55 c5r** 6F5 **e53r3 p96r8 s7Br s8Hr pEGc8 u248r7 x5** 4H9 **c6b fBc a48 t3C2Hr bIc1** 7C2 8G2 **cAc c7r d2r h15** 7B1 8D1 7D5 **o248r7 q2C** 8C5 8B7 9B8 9H5 **r28** 6H8 5G3 2H3 3C3 2A1 2B9 1H1 3F1 1F7 2C7 1B6 1A5 2G6 3I7 3G5 6C1 6B3 4B5 5A7 6A9 5I5 4G7 8H6 7E6 5F6 4C6 5C8 4E8 8F8 7G8

228: 1C8 7D5 5F5 4B5 3A5 4C7 6F2 8I8 6G8 4H2 1I2 7C2 7H3 **a79 cGc** 6H6 9I6 **a69 e91r7 p76r1 q3I q7I a71 cBc** 2B2 5A2 **a44 c2r h132** 9C9 6A9 6C4 **s3Fr x4 t8F1DC q1A u479r1** 6B1 5B3 6E3 9D3 **d3r h36** 3F3 1G3 3G6 **p38r4 q7A t7E1Fc o158r1 t8F4Ec x4** 5E8 2D8 8D9 **x7** 1A7 2A6 3B4 2F4 1D6 1F1 3E7 2E9 2H7 3I9 4E6 5D1 4D4 4G1 5I4 5H9 7A4 9A1 8B7 7E1 8E4 8F6 9F7 8H1 9G4 7I7

229: 5E8 6H2 7I5 1E5 9G7 8G4 **a51 eFCc2 e72r8 c2b d7b a73 p62r4 p52r9 t2I3Er** 4H4 6A4 4A3 **bIc9 f1r x9 s4Fr q4C** 6B5 4D5 **a46 uEDGc9 v1245r9 s9Dr dDc p83r6 q8D** 7C3 **t9D7Hr w3B7** 1A7 **q4C** 9C2 8A6 8D2 2F2 1D8 2A8 3D3 9B8 7A1 9E1 9F4 3E4 1F9 2C9 1C4 2I4 3G9 5A9 5B2 3A2 4B7 4C6 6D9 6F6 4F1 5I7 4I9 9D6 7F8 7E9 7H6 3I6 1B6 3B1 1G1 1H3 6I1 6G3 9I3 8I8 9H9

230: 1C8 2D2 2G1 1H5 9G2 6H2 5F2 7I8 5G3 5D5 **a29 a93 d4r** 4I5 **pCFc1 t4A3BC t8G9CR** 6C1 4E1 6E8 4B8 4A3 3B3 3A1 2H3 8I3 **d9r** 9E3 1F3 **pHDc6 a86 x4 q7H uEDHc4 x7 q4H q6I b3r7 q9I a16 cCc q9I x7 x9 q5E eHDc4 q6F oBDGc9 q3H q4D x7** 3D7 1E4 3E6 3F9 3H4 2I6 1A6 1G7 6I4 4D4 5E9 6B9 6A5 5C7 2A7 2C9 6F7 6G6 4H7 4G9 9B5 7B1 8A9 9F1 7F4 8F5 7E7 7D9 9D6 8C6 9C4 8G4 7H6 9I7

231: 2A8 3G3 1F3 5E9 7B9 8D7 9D3 4E3 8A3 5B3 6E8 **a16 a21 a67 a75 a88 b9r6 d6b e86r6 f7r a94 q5C** 1C7 6B7 **gHc pBGc1 a61** 9G6 3H6 2B6 3I7 5H7 5I8 9H8 **t2G8Ic u249r2 x2** 4D2 **a55 q2G** 2D1 **q5G a25** 1B5 **c3r r18** 7A6 6C6 5D6 5F5 3D5 3F8 6F1 8F6 7D8 **oACHc2 q8I** 1I1 7H1 9B1 5C1 5A2 3B2 1A4 2F2 3E4 1H2 4B4 4G1 5G4 2I4 2G5 4H5 8C2 7C5 7E2 7F4 9I2 8H4 8I5

232: 5E1 4D3 5A3 6I1 8H1 9A1 6F2 **a44 a69 cDc f4r a66 cGc f8b s4Ar x7 x7 x8** 2B9 **d6r g3r dHc t1H2Fr cFc x5 x7 m7r u257r8** 1I9 3E9 2E3 3I3 3H6 4H9 4I2 7H2 **x5 x8** 6G6 4C6 8E6 9E2 8A2 3B2 **e43r5 pFAc8 c3r r18** 8C8 7E8 3F8 1A8 1E5 3A5 6B5 5B8 4A7 4F5 6D8 5H7 2G7 3D7 1C7 3C4 2F4 1H4 2I8 6A4 6C9 5I4 4G8 9C5 7C3 9B7 7B6 7A9 9D4 8D5 7F7 9G3 7G4 7I5 9I6

233: 1I8 6C8 6D5 5H5 6I7 3H7 4G8 7D8 8I4 7A4 5C4 4E4 3D4 6E3 4I3 **a39 b6r1 cHc c9r p41r6 p59r9 s7Er x1 x6 u357r6 oBEGc6 t2D3Br t2F1AR a12 v1246r1 q3B** 1C2 1H6 3I1 2I9 3C9 5G6 4A6 5B9 4F9 5E1 4H1 8G1 9D1 9I6 **h15** 2A7 8C7 7B6 2C6 3E6 3F2 2D3 3B3 8D6 7F7 8F3 7H3 9G7 7G2 9E2 8A2 6B2 6A1 2B1 1A5 1F1 2F5 9B5 9A9 7E9 8H9

234: 1B6 1C9 1F5 9H6 **dCc p73r4 a14 p94r5 pIBc5** 6C5 2H5 **o249r7 d6b** 3I8 2B8 **a32 dHc a63 gEc** 1H3 **p72r1 pHFc9 s2Dr c2r a24 e72r1 t9C7Dr uECGc3 q4D** 3D2 **p37r3 s7Fr x3 fBc x9** 4D9 4E3 4I6 4G5 5H7 2G7 3F7 2D3 3B3 3C4 2A1 1E1 2E4 3H1 1G4 1I2 4B7 5I1 9C1 7B4 8C7 7A3 5C3 6G3 7D1 8F3 9D4 9E7 7F9 8E2 6F2 8I5 9B5 9A2 5B2 8B9 7G2 7H8 5G8 6E8 5E6 6A6 5A9 6H9 9G9

235: 3A8 6B5 2C5 5I2 8E5 5F5 9H2 9G8 1H8 4I8 6E8 6D3 6H6 **a46 a94 bIc1 cAc** 8A1 **cDc o156r7 p38r3** 7I9 **a93 s1Gr cGc u149r4 x4 t2G3Cr** 3E1 7D1 1D4 **dCc d7b s2Fr a26 f2r v2349r9 x9** 4E4 9F4 7A4 3C4 2B3 1C9 1B1 2A2 1E2 2F7 3F6 2E9 3I3 2G4 2I6 1G7 3H9 4C1 4B6 5E7 6A7 5A9 5D6 4F9 4H7 6G9 7B2 9C3 8C6 9B9 7E3 9E6 8D9 8G3 8H4 8I7

236: 2I2 4B7 8I9 **a21 bIc1 c1r** 1H7 **dGc** 3G1 **dHc eGDc5 p16r3 p35r9** 4A9 3B9 1F9 1D1 5E9 1A6 4I1 **b8r6 c4r h24 p57r2** 9A2 **dFc** 6E6 **a58 f7r p95r4 p37r8 s8Er uCEHc4 x8 t7H8AR** 2A4 **eDBc4 oAFIc8 q5C** 5F1 5C2 **eHCc8 q6B** 6A8 6B1 8A1 7C8 2B8 3H8 8C7 9B4 6C4 5B3 6I3 2G3 3E3 1C3 3C5 2D5 2F6 2E7 1I5 6F5 4E2 5D4 4D8 6H2 4H4 4G5 5G8 7B6 7F2 8E4 7E5 8D6 9D3 9F7 8F8 7H1 8H3 9G6 7G7 9I8

237: 6B1 4F6 **a28 a54 a88 c1r** 1A8 1I1 5G1 **a67 cFc d1b f7r g3r h67** 3E3 7D3 9B3 4C3 5C8 **p14r2 pHAc5 a45 b9r5 t5I9Hc u417r4** 6C4 **u827r9 s8Er** 3D6 1C6 3C7 1E7 5D7 **x2 c8r** 6D9 **a52 eDCc2 o278r9 q2C** 1B4 1H2 **q9A** 5I5 3G5 6A5 4B2 2C2 3B9 3F2 2E4 2F1 2D8 3I4 2G9 5A9 5E2 5F4 6G2 6H7 4H9 4G4 4I8 9A2 7C9 8C5 7E1 8D2 7F5 8F8 8E9 9E6 7H4 9H5 8G6 7G7 9G8 9I9

238: 2I8 4G4 7I4 7G9 8A9 2G3 **a35 cFc c8b c8r d1r a25 pFAc5 pDCc8 q5I x2** 1G2 1E7 **uCDGc7 pFBc7 oCDGc7** 6I6 **s7Hr** 8H6 **r28 v1268r5** 4E8 9D8 7B8 6C8 5H8 3D2 **q6B q4B** 6B5 1C5 3C4 1F4 2F6 1B6 4F5 6D7 6E9 2D9 3B9 3A3 2B1 3E1 2E5 5A1 4A2 4C6 4B3 5B7 5I2 6H3 6G1 4H7 3I7 3H5 9C3 9A6 7A5 8C7 8F1 7E3 9E2 8E4 8D5 7F7 9H1 7H2 9I5 9G7

239: 6C4 4B8 5E5 6F8 2D8 3H8 2H9 8G4 1I4 3B4 9G5 8A5 2C5 4A2 1B2 5A9 3C9 **a13 a63 bIc3 cIc cAc d6r h23 pAFc6 x6 x7 x7** 9C7 **a71 b5r1 eIBc7 bIc7 oCEGc6 p63r1 q7B u925r1 uDCGc1 vBCDGc1** 7H7 8D7 8B1 9A6 7B3 2A3 6I3 6H2 7I2 **q1C** 1G7 3E7 2B7 1C6 3A1 3F2 2F6 1D1 1E3 2I1 4C1 5B6 6A7 6E1 4D3 4E9 5H1 4G6 5I7 6G9 9F1 9E2 8F3 7E6 7D9 7G1 9H3 8H6

240: 6E3 1F3 3H3 2H8 3D8 9C3 9I2 8E2 8B8 **a46 c5b d4r c6b pIFc6 u835r6 uBFIc6 v3568r6 cHc** 9A5 3A6 2I6 1E6 5C6 **cFc r48 x4 x5** 4H5 5I7 4E7 7I5 1H7 9E9 9H4 **o247r4 d8r** 9D7 **s1Br x9** 7G7 8C7 2B7 2G1 **h69** 6H6 5G9 6G4 4F4 2E4 1D5 2F9 1A9 1B1 3C2 2C5 1G2 3G5 4B2 5A4 4C9 5E5 5F8 5D1 6D9 8A1 7C4 7B9 9B6 9F1 8D4 7F6 7E8 8G6 8H9

241: 9E4 9F7 1E7 1D6 9D1 8I1 8H4 **a75 c1b** 2B7 **bIc3 s1Hr a33 f4r uDBHc2** 3F2 **e73r3 s1Fr t8F7Cr u837r9 uHAIc9 x8 x9** 3C9 1B3 2H3 3E3 2F1 3G1 7C3 8C5 8F3 8G6 **cEc p14r5 eHFc5 m6b o478r9 f6r** 5A5 7E5 5E2 5G7 6C7 **r08** 5I8 2G8 1F8 2D5 1H5 1I9 4F5 6D8 4B8 6B1 6A9 4A3 5C4 2A4 2C6 4E1 6E6 6I3 4I4 6G5 6H2 4H6 4G9 9A6 9C8 8B9 9B2 7D9 8D2 7G2 9H9

242: 2B7 2H2 8A7 7G7 6D5 1A4 **a19 a64 bIc3 d7b f5r** 5E8 9D8 9F7 5D7 5F2 7D2 8B2 7B4 7F1 8H8 2I8 3C8 8G4 3H4 2D4 4F4 6I4 9H5 8C5 4B5 **eIBc6 pCEc1 a51 u627r3 uHBFc9 a69** 1B9 **t6G5Br o246r1 s6Fr v2678r3 c3r o368r6 q2E** 5B1 2C1 3B3 2E3 3F9 1D6 3D1 1H1 3G6 2G9 4C6 6G1 4E1 6E9 6F6 4D3 5A3 4A9 6H3 5I6 5H9 7C3 9B6 8F3 8E6 9I3 7H6

243: 2B5 3D5 3E9 5G9 6A9 4A4 7B6 8C9 7E1 9F5 8G1 **a12 a26 a41 a63 a82 bIc2 g1r p73r7 q8B t4E5Ir uFBIc3 x3 oBFIc3 fDc x8** 8H2 **b1r8 t6H4Dr v2357r8 q8F** 8B8 9I8 7F8 9G6 2H6 3H8 7G7 1I7 2D7 3C7 2G4 1G2 2C2 2A8 3G3 5C8 5A1 1C1 1A3 6F7 5D3 4E2 6B2 4B3 5F6 1E6 1D8 1F4 6E8 6D4 4D1 6H1 5I2 6I3 4I6 4H7 9C3 7C4 9A7 9D2 8F3 9E4 8I4

244: 2B4 3D3 1A3 2E1 5B3 4C4 4A8 5E6 7D1 7F5 9B5 8C2 8D4 5F4 9E8 9G2 7I4 7G3 4I3 7H8 1F2 2F8 **a46 b6r2 c4b p61r5 p95r9 pFGc9 r08 uCBFc7 v2367r9 x7 p63r7 c1r c3b e61r5 cIc** 8I6 **cHc oBCFc7 q7A** 7B7 7A6 6B6 6A2 3B2 7C9 **r48** 6C7 2A7 3A9 1C5 3C8 1E9 3F7 3H5 3G6 3I1 1H7 1I8 2G9 5A5 6G1 6I5 4H6 5H2 4D2 5D7 6F9 4G7 5I9 8E7 9D9 9I7 8H9

245: 2B6 2D2 5B4 5D3 6F7 5H9 5G2 **a33 a61 a65 b5r1 c2r h15 o248r7 oCEGc5 dHc f9b m9r p93r9 q4A** 2A5 1G5 5C5 4D5 6I5 4I1 6A1 9E5 8H5 9G7 2H7 9I4 9C6 **pGCc8** 3B3 **s3Dr t7C9Dr eDAc9 p28r8 u715r1** 9B1 1B2 4B8 4A7 8B7 8A3 7A2 9H2 **a91 x8**

7E4 1F4 3A4 1C9 3C7 1A8 1E7 2I9 3D9 3E1 2F8 1H1 1I3 3G8 5F1 5E8 7C8 9A9 8D1 9D8 7F9 8F6 7G1 7H3 7I6 8I8

246: 3A8 2C3 1D5 5A3 6A4 6C9 8A7 9E8 **a11 a29 d3r a24 fDc h39 fFc pGDc4 pEHc7 uIBEc7 a37 x1 x2 x6 t7E8Cr x6 g5b s1Ir a34 f1r s7Hr t5E6Hr** 4B7 **x1 c1r bIc2 x1 gIc d4r eIBc2 q4F** 4I1 5B1 1A1 1B9 4C2 3B2 1C6 1H2 2G6 3E6 1E4 2F7 2D1 3I4 1I7 2I8 6F1 6D2 4F5 5E7 5I2 6G5 6H7 4G8 5D8 5F6 4D4 5H4 8C1 7E1 8D6 9H1 8G4 7F4 8F2 9G2 7A2 9A9 7D9 3F9 3D3 9F3 7I3 9I5 7B5 9B6 7H6

247: 3B1 3G4 2H9 6A9 5F1 7G1 9A1 8A4 **a32 a95 d4r** 4B4 6D4 **f8r u359r3 uBAFc3 v3459r3 a63 p67r3** 8G3 8I5 **a33 a97** 4I7 4H3 3I3 6H2 4E2 **d1r dFc x6 oBFHc6 x8 p92r8 a18 q3C** 1A6 **cEc e53r7 f2r q2D** 7D5 8F2 2D2 3F6 1E5 3D7 1F8 1I2 2G5 3C5 2I6 1G7 3H8 6F5 5E3 6B3 2A3 2B7 2C8 5C7 5D6 6E7 4D8 4F9 7C2 9C3 7A7 7B8 8B6 8C9 7F3 9E6 9D9 7H6 8H7 9I8

248: 6F4 8A2 7G7 8C5 1B5 **a71 a74 a89 cAc c4b gBc p75r2 fDc** 6D9 5B9 6C7 **bIc7 s2Er uDBGc8 x3 c2r** 3B8 2B7 3D7 **d3b q2E bIc3 oADIc3 x6 t6E4Br fFc a53 c9r e94r2 p24r8** 5E7 8F7 **pFIc8 uIACc6 x8** 1D8 2D3 3F1 2A1 3A4 2E6 3H3 1A3 1C6 3C9 2I4 3G6 2G8 1H9 4B3 5A6 4D1 6E3 4F6 4E8 5D2 5F5 4G2 5I3 6H6 5H8 7C3 9E2 9F3 7D5 7F8 8E9 7H2 8H4 7B4 9B6 8B1 9H1 9I5 7I6 8I8 9G9

249: 2G2 6B9 8C1 **cGc d1r d4r** 4A8 7C8 **a72** 4H2 **d1b p17r9 t1F2Ar t8F6Ec uDAGc4 a54 u612r5 x5 c3r c9b r48 x6 f7r** 9A3 **eGAc5 u934r6** 8D9 7H9 3G9 2A9 3A4 1F9 2F4 1H4 5G4 6D4 8G5 7B5 9B2 5A5 6C2 **b3r5** 1I3 **oBDGc6 q8F s3Dr** 2I1 2C7 1C5 3B6 2E5 2D3 1E6 5C6 4B7 4G6 7F3 4E3 4F1 3D1 3F8 9E1 7D2 5F2 6E7 5D8 5I7 3H7 3I5 6H5 6I8 9D6 8F7 7A7 8A6 8E8 7I6 9G7

250: 4B4 5C6 6F3 6B8 6A9 4H7 6D7 4I8 2G8 3G5 5D8 9E8 8A8 **cHc c2r dEc** 4D6 **d1b j46 p17r3 a73 f8r p58r1 r08 x1 c1r t7I9Cr eDCc4 uBFIc7 a17 x2** 2C9 7B9 4E9 4F5 2D5 7E5 **bIc2 c8r e85r1** 2I1 **cIc o125r2 q1C** 2A6 2H4 **q9A** 9H2 5G2 3I2 2F2 1B2 2B7 3F7 1D4 3A4 1C3 1E1 3E6 3H3 1I6 1G7 5F1 6E2 6H1 7A3 9A1 8C4 7C2 9C7 7D1 8D2 9F4 8F9 8G1 8I3 8H6 7I7 9G9

251: 1I3 5H3 4E3 9F3 7A3 7C6 7H9 7D7 **a81 a85 b1r7 d6r pCGc1 p62r6 q2H p41r5 s3Br c3r** 3G6 **t6E1Dc u926r8 cEc h15 x4** 2H7 3A7 8I7 3I5 7E5 8E1 7I1 **c4r eIAc4 fBc a46 q2A a75 t5B4IR c4b o458r8 t6C5Ir x2** 1E2 1F7 3F9 1B9 1C5 2A4 2B6 3B1 2F1 1D6 2E8 2I2 1G4 5C1 6A2 6C4 4B5 5A6 5B8 4D2 6E6 5E7 6F8 5F5 5D9 4G1 5G2 5I4 6H5 4I8 9A1 8B2 8A5 9C8 8D8 9D4 9E9 8H4 9G5

252: 5E3 6D4 5F5 7B4 2C4 8E5 **a18 cFc c2r c2b d8b e72r1 p14r1 eFBc1 u529r9 o146r9 t5D6HR** 9H3 **a97 x2 s8Ir t6I5Br** 6G3 **q6C** 9C7 5C8 4C3 8A3 **a47 b8r6 cBc** 6B5 **e86r2 oBEHc6 fIc f3b r18** 8I2 9B2 6C2 4B1 2A1 3A5 1F1 2E9 2I5 1H9 4A7 6A9 5B6 5D1 4F9 6H1 6I6 5I9 8C1 7A6 7E1 7F2 3D2 2G2 3H6 2F6 5H2 5G7 3I7 1B7 3B8 1E8 3E4 1G4 4I4 4G8 9E6 8D8 9D9 8G6 7H7 7I8

253: 1B6 3D6 4D3 5C3 6H6 9B4 5A4 7G3 1H3 7I6 6D4 4G4 **a12** 6G2 4F2 4E8 **a97 f3r uAEGc7 x1** 1F1 3H1 6E1 5I1 **p96r9 t2B6CC v2469r9 x5 c3r dCc a75 b9r2** 8H7 **cAc e53r9 o269r7 q7E** 5E9 6F5 4H9 3G9 1G7 2B7 1A9 3E7 2F9 3F4 1D8 2I4 2H2 1I5 3I8 6C7 6B9 5G5 7A7 9C9 7E5 9F7 7F8 8B8 8A5 3C5 3A2 4B5 4C1 7B1 7C2 8D2 7D9 9I2 9H5

254: 1C2 3C1 3A9 3B5 6A3 7B6 7G9 3F7 4C4 6C9 4E9 8H2 6I6 **c6r fDc h57 d5r a48 bIc8 pAIc5 uGABc7 a67 d8r u358r8 u836r8 uDCIc8 v3568r8 q7H e63r8 x1** 1F6 3G6 8E6 **q3H s7Dr t4F2Ec eHEc4 c8b s1Dr x1** 6E1 5F8 5E3 4F2 4I1 5G2 6H8 2I8 1A8 2A4 2B7 3E8 1D4 2D1 2E2 1G1 2G3 3H4 4B8 8F1 9D2 9F3 7E4 7D8 9C8 8A5 5C5 4A7 6D5 5D7 4G5 6G7 7C7 7H1 7I3 9G4 9I5 8I7 8G8

255: 3I6 1I3 6F6 7G6 **a42 a43 cFc** 3F2 2A2 5B2 9D2 6E2 8G2 9G4 7H5 **p62r7 t9A7Ir**

u367r8 t9C3Bc c3r o367r8 a98 pCHc9 a39 a99 cIc q2D a37 r78 x1 x7 4G9 5D9 **s4Er a55 c4r c4b** 5I1 9H1 7I7 9A7 **cAc e62r1 eFBc7 h35** 3A3 5C3 5A5 3E5 1F7 3C7 2D1 4B7 6C1 4F1 4D5 4E3 5E7 5F4 6D8 6H7 2G7 1G5 2C5 3B9 1C8 1A4 1B1 3H8 2H9 5G8 7A1 8C4 8B5 7B8 9C9 7D3 7E4 8F8 9I8 8I9

256: 6H7 4I9 2H9 4G1 9I4 5A4 4C3 5E3 9D3 **a87 f1r** 1G4 3G8 5H8 **f8r t3H8Ic uDBHc2 x1 cHc cCc a16 c8r dAc o128r2 a52 pCFc6 v1259r6 b4r6 x5** 1H5 5I5 6G6 5B6 7C6 8D6 4F6 8G5 9H6 6C2 4D2 **p49r5 a75 c9r l58** 4E8 6A8 4B5 9A5 9B8 2E5 1E2 3D1 3F4 1F3 3B3 2A2 1A6 2C1 1B7 2F7 1I1 3H2 2I6 6D4 6F5 6E9 8A1 7B2 9C7 8B9 9E1 7D5 8E7 7F9 7H1 8I2

257: 2B4 4F3 6D6 8B3 **a51 bIc7** 5F7 2E7 **d1b o159r2 c6r** 6E1 **fCc h27 gAc p47r9 eECc9 t9C8HR cHc u928r6 x6 s8Dr t7F8Ir** 8F6 9F1 9D4 3E4 7I4 **bIc9 s2Fr q2H** 1G3 **p81r5 s3Gr x8** 2F8 1F9 1D5 3D1 2D3 3A3 1I1 2I9 3G6 2A6 3C5 2H5 3H8 6A5 6C8 4H1 9A8 7F5 8I5 4G5 6H7 4B7 4C6 5A9 6B2 4E9 5D8 5I2 4I8 9C2 1A2 1C7 7B6 8A7 7C9 8E8 7E2 8D9 8H2 9I6 9G7 7G8

258: 3B4 2I6 **a15 a27 a28 a76** 1D6 **c1r** 2E7 3E8 2C1 **a23 c3r g8r b8r1 cIc** 4H2 **a63 o159r7 p17r2** 8E4 4D4 5C4 **a82 f6r a61 a65** 5E6 9F6 **pDHc9 t7I9Cr dHc c9r e91r9** 6E5 4B5 4E3 **a59 b8r9 q4C cAc** 6F9 4F7 **uCFIc8 x8** 2G8 3H3 2D3 1E2 3D9 3I2 2A2 3A5 2H5 1G9 6G3 6H4 5G5 7D2 9E9 7E1 9G1 8G2 7G4 8I5 7H9 **r38** 5B8 6A7 6B6 4A1 4C9 6I1 5H7 4I8 8B1 7A6 9C7 1B7 1C3 7B3 8C8 8A9 8F3 7F8 7I7 9H8

259: 1B4 6F2 5G4 6E4 9D4 3F4 6C5 3A5 1H5 4G5 7A1 8I1 7I9 1F8 **bIc6 p73r8 a38 p94r9 eEAc9** 4D7 **s2Dr a26 c3r c2b q7D t4H3Ic u237r3 uHEIc3 x3 x7 c4b h67 o357r8 t6I8Hc oEHIc3 q9B b8r3 d9b a96** 8D5 5F5 **q7G e92r7 q9B** 9G7 1I7 2A7 2B8 2C2 3C3 1C1 3D1 1E3 2G3 5E1 4E6 5D9 2F9 2D6 4A9 5C8 6I6 3G6 3I8 5B6 6B7 5H7 5I3 4H8 8B3 9B2 9A8 8C9 7C7 7D3 7F6 8F7 9E9 8G2 9H3 8H6 7G8

260: 9A1 7A8 5H8 6D8 **a51 a72 a75 a77 bIc3 bIc4 c5r c4b bIc6 fAc fIc** 1G8 8I8 6I1 **f8b p38r9 c7r q7C t6G9Ic pGCc6 u157r4 fDc** 1B1 1I3 3I7 1F7 6A7 **d2b eFBc9 f4r a52 b9r2 o157r4 v2357r6 q8C** 7B2 8E2 9D7 4E7 4D1 8C7 9C6 5B6 6C3 3B3 1A9 2C4 2E3 3E1 2D6 3A6 2A5 3F9 1D4 2G1 2H2 3H4 3G5 5A4 4A2 4C9 5D3 4G4 7C5 8B9 9F3 8F4 7E6 7D9 9I2 6G2 5F2 4F5 6F6 5I5 4I6 7I4 9H5 8G6

261: 1B4 3C8 5E1 5D6 4A6 5A4 4H4 4G1 7B3 2A3 2B1 1C5 3H5 5B5 9A5 8C1 6A1 7E4 9H1 8D3 **o348r9 p92r2 s1Ir p41r7 u814r7 x7 x9 cGc c9b uDBGc7 x7 c1r bIc2 d6b b6r7 v1458r7 cEc e81r2 s9Dr e75r9 q8E** 7D5 2F5 8I5 7G9 4I9 6D9 5C9 6C2 6B7 5F8 4F7 5I2 5H7 5G3 1H3 3F3 3E9 1E6 2D7 2E8 1F2 2G2 3G6 1I7 6I8 7C7 9B9 9E2 8E7 9D8 8F9 8H2 7I6 9G7

262: 2B8 3E8 9E7 7G2 7F8 5F5 5D6 8E6 **a59 b7r9 c8r c8b d7b** 4C4 **pDGc4** 5I4 4I7 5A7 **a94 c9r o359r1 r28 q2H** 2E1 2H4 **a36 s3Hr a32 x5 x9** 3D5 7E5 8B5 7B4 7A9 9D4 1E4 8G4 **dCc a49 e81r9 cHc d4r h29** 4B9 6E9 4E2 **t2A6BC q1G a45 cAc u618r3** 4A3 1B3 1C2 1A5 3C1 2C9 2A6 2F3 1D9 1G1 1H6 3I9 3H2 5B2 6A1 6C5 6B6 5H1 6I2 6H3 4G6 4H5 6G8 9B1 9C6 8D3 9F9 9I3 9G5 9H8 8H9

263: 2B8 1I6 1G2 6A2 5F8 5D6 8C9 7F6 9C6 9I2 8D2 4E2 5E5 1F5 3G5 4C5 6E9 3D9 1A9 5G9 6G7 7I8 9A8 **a74 o357r7 p82r4 x3 c1r q6B c1b v1357r1 x1 cCc x1 b9r1 e86r1 t2F9Ec o126r3 a63 c3r c3b e53r1 r28** 8F4 1E4 3A4 1C1 2D1 3E7 1B7 3C3 2F3 3I1 1H3 2G4 2H7 6B3 5A1 5C7 6F1 4D3 4H1 5I3 4I4 8B1 7C4 9B5 7A7 7E1 9E3 9D7 9G1 9H4 8H5

264: 5E6 7B7 7E9 9H6 1I6 3B6 **a19** 8I9 7I4 **a48 a92 cEc d6r a55 t7D4Fc** 4D5 3F5 2H5 **uHBFc1** 2G1 8G2 **a91 s3Hr x2 x2 oBDFc2 a62 j39** 3A7 **cHc e62r7 dDc b2r3 eGDc3 s1Dr d2b s9Cr p18r4 q5C q4A** 6B5 8A5 **a43 e81r4** 2B3 8C3 **q1F** 6A2 1B2 3E2

1D3 2I2 3H3 1H7 2D7 2E8 1F4 1G9 4A3 5C4 2A4 2C9 5B8 6E3 4E4 5F7 5D2 4F8 6D1 4I1
4H2 5G3 6I7 5H9 8B4 9B1 9C8 9A9 8F1 9F2 9D4 7D8 7H1 8H8

265: 1G1 3H3 1C3 3C6 3B1 2C5 6B4 5C9 6G6 7A3 9F3 8G3 9D9 2A9 1F9 7E1 1E6
a35 a65 p59r4 uFDIc4 c3r x8 7G8 7H5 4G5 8H6 7D6 **p73r4 a24 c2b o259r4 r68 s4Dr**
b6r7 x7 q3I q5G vACEGc7 q4H x7 q7F 2F8 3A8 1B7 2B2 3E7 2H7 2G4 4I4 5E4 4H2
5G7 9C7 6A7 8B8 7B9 7F4 3D4 1D2 3F5 3I2 1I5 6D5 4D8 6C8 4C1 6F1 4F7 8D7 9E8 9G2
9H4 7I7 8I9

266: 3I3 4E7 6E2 2G9 1A9 8C9 9I9 8H2 8I8 7I5 **a38 a56 bIc2 c7r d2r a15 cAc** 5C7
4C2 5I2 **c5r h27** 2A2 3B7 2H7 1H8 2B8 7B2 7A7 **o356r6 uACFc4 s8Fr p58r1 uACHc4**
a74 cBc a45 v1247r4 t4B6HR x1 1E1 2E6 2D5 3F4 1B4 3A6 3C5 3D9 3H1 2I4 1I6 5A1
6C4 6A5 4B6 6D1 4F5 5D8 4D3 6F9 5F6 4I1 5G3 4G4 6H6 6G8 9B1 8B5 8F1 7D4 9E5 8E3
9A3 8A4 7G1 9H4

267: 6I5 8G6 3B5 **a41 a85 c8r dFc** 8I3 **bIc3 c9r c9r f1r p86r7 t1G7Ic c9b eHFc7**
pFHc8 fGc u147r9 2D1 3A1 7E1 8F8 7D7 6F7 4G7 3I7 1C7 2C8 1G8 8H7 7I8 **p35r6 a56**
x9 x9 t1D3Cr 8C4 8A5 **o147r9 q9C** 7A6 **d1r r18** 2B3 3G3 1F3 4A3 6E3 4E8 6H8 9D3
9E5 9H1 9G4 3H4 1E4 2A4 1A2 **a52 r18** 4H2 5G9 2I9 2G2 4D9 3F9 1B9 3C6 3E2 1D6 6B6
6C2 5C1 4C5 5F2 5D5 5E6 6G1 7B2 9C9 9I2 7H9

268: 5B4 5C8 8A7 8B5 9H7 5G7 4H1 4I5 3G6 **a21 a38 a93 a94 cBc** 3B3 **c9r c4b**
fDc h34 2D3 3F4 9F3 9D4 3H5 **a22 r18** 5E6 6H6 **a59 u629r2 uHACc2 q4G** 7G8 **p17r9**
v1257r9 x9 cHc a92 oBEFc2 6D7 **q7D** 4D8 6F2 2E2 1E5 1D1 5A2 3C2 3A1 6C1 6A5
2C5 1C7 2A9 2F7 1F6 2B6 1B8 2H8 2I4 1H9 6B9 4F9 4G2 5I9 5H3 9B2 7C9 8E1 7D2 8D6
8F8 9E9 8H2 8I3 7H4 7I6 8G9

269: 4A1 5A8 2C8 6G9 8B3 **a64 a72 a74 a76 bIc7 d6r** 6H4 **e53r9 s9Dr** 7D8 6F8 6D1
1F1 1B6 2B4 1G4 **f8r gHc t2A3DR uADGc5 x5 q8C q4E** 4D4 8F4 9A4 **x7 cGc c3b**
o238r5 7A7 **pDHc7 fIc x7 s4Hr x2** 4F3 **cHc q6I** 4E9 3D9 2A9 1C5 3B7 2D5 3G5 1I7
4C7 5B9 5H7 6E7 5F2 2E2 3F6 3I2 2H6 2I1 2G3 3H8 5D6 4H2 6B2 4B5 5I3 6I5 8A5 8C9
9C6 7C2 8E6 9D7 8H1 9G2 9H3 7H5 8G7 8I8

270: 3E7 2G8 4H7 9E6 4F6 9I7 **c2b** 2D1 8E1 9G1 6H1 6G6 3G9 **a69 cDc a52 a54**
o367r3 r48 c2r fBc 1A8 **d7b** 8C6 **s6Ir p57r5** 8H9 5I9 **q5H bIc4 uECGc5** 8D5 7E8 6D8
8B8 7B7 8F7 **v2457r4 q4A** 6B3 **x2** 2I5 **q3H** 1I2 3H3 2A3 1B9 1C1 1E3 2E9 2H6 3B6 4B1
4A9 5H2 4G5 6C5 4C2 2B2 3C4 3D2 2F4 5B4 6E2 4E4 5E5 6I4 9A2 7C3 8A4 7F2 9D4 8I3
7G4 7H5

271: 2I5 7C5 8A6 7A7 9D5 **a94 e42r6 f2b a27 b4r7 f5r** 4G9 5I6 2G6 3F6 2D4 4D6
6I7 5F7 8F4 7I4 8I9 7E9 **x3** 1I3 **x3** 9F3 8G3 **a98 q6F u248r1 x2** 5D8 **b1r8 c1r v1367r2**
8C8 **a48 q6F d4r** 5H4 **x2 t6C2AC eIAc1 o248r1 q3G** 7G1 4H1 3I1 2B1 6F1 1D1 1F2
5E2 6C2 2A2 2C3 3C7 3A4 2E7 3E8 3G2 2H8 5A3 4C4 4B7 4A8 1B8 1A9 5B9 4E3 6H3
6G8 9A1 8B2 8E1 7D2 9H2 9I8

272: 1I9 3I1 3G3 4A3 6D2 5E6 6E7 4D8 4F1 6I8 8B3 8D1 9I3 9C2 2G8 **q4E uAEHc9**
a79 x4 a24 pFCc4 u825r4 o349r4 s9Fr x5 c9r c8b q9G bIc5 x6 e91r6 q6C 1C1 **q1D**
uCBEc5 v1249r5 q8H 8I5 **b8r4 q7C** 4E4 3D4 1D7 2F6 3B6 1A5 3E5 2H5 1G6 6F9 5B9
5A1 5I4 5H2 2I2 3A2 2A7 2B4 3H7 6C4 6B5 4G5 4H9 7B1 8A4 7C5 8C6 7A8 9A9 7F4 9F5
9D6 7E9 9G4 7H6 7I7 8H8

273: 2G5 3E5 7A5 6C5 7B4 9B8 9G7 2E9 2B7 5A7 4E7 5E2 7E6 8A2 1A9 5B3 4G2 **a58**
cFc d9r a81 dDc h29 9I2 7D2 9D9 7H9 **p73r3 eIFc3 pBIc6 q8H b5r1 r38 x1 x4** 3A4
c4b e43r6 u324r1 d1r t7I1GC a34 q6G a28 v2345r1 q1H 1C1 3B6 2F1 1E4 3F3 3D8
1D7 1G3 2I4 1H6 3H7 3I1 1I8 6A6 4B1 6D1 4F4 5C4 4C9 6E8 5H1 6H3 6G4 4I6 5G8 5I9
9A1 9C6 8C3 8E1 9E3 7F8 7I3 8H8

274: 6F3 4D1 8I2 3G2 9D8 **a54 a55 a91** 2I1 1C1 7C2 **c1r fBc a44 fHc a69 uBDHc9** 7A7 **a87 j29 d2r pFBc6** 8A3 4C3 3B3 **bIc6 v1278r5 t3D2HR o237r9 x5 q7F** 1F4 2D5 3C5 2A6 1A2 2B9 2E2 3F6 3D7 1E9 1H5 2H7 3H9 3I4 5C6 6C7 4H6 5G7 6G1 5B1 6B8 4G4 6A4 4A9 5E4 4E8 6E5 4I5 5H8 6I9 9C9 7D9 7H4 9B4 8B6 7B5 8F5 7F1 9E6 8E7 8H1 9G5 9I7

275: 6C1 4A2 4E9 5I7 4F7 5G6 8I1 6E8 8F8 **d2r** 2E1 **a15 dAc t9A7Er pAEc5 u938r6 a96 x3 q2D** 6I2 **cHc r08 s1Ir a33** 9I6 9H2 **pGBc3 r08 oDFHc5 x3 bIc3 s8Er eEAc5 dCc** 9B8 **f8b p17r7** 9A4 7E4 **q3B** 1A7 7C7 8B3 5C3 5A8 3C8 2H8 1H9 2A9 3H6 4B5 1C5 6D3 5E5 4G3 6H5 8A5 7B6 7A1 9C9 9E3 7F5 2D5 3D4 1B4 3B1 3E7 1E2 1F6 2F3 1G1 3G2 1I3 2I4 8E6 9D7 8D9 7H3 9G5

276: 3H7 5E1 5F7 4B7 6C4 2B4 4D4 6F8 5D9 6A9 6I1 7F4 9H4 6H6 **d2r o258r6 pEHc8 p28r9 a79 c9r s8Hr t2G9Ic u147r2 x5 d7b** 8G6 1I6 2C6 5B6 2G9 9I9 **pIAc5 v2579r5 cGc a98 b2r8 o235r2 q2H** 8E8 2D8 3D2 9E7 8C7 8B9 9C5 4A5 1B5 1A2 3A3 3B1 1F3 3F9 1C9 3C8 2E5 2H2 3I5 1G8 5C2 4G2 4I8 7B2 9D3 8F5 7D6 9A6 7A1 9G1 8H3 5G3 5H5 7G5 7H8

277: 1A4 2F9 4G8 7B8 9A9 5B9 6H9 9E8 3D8 9G2 3B6 2I6 1I7 2D7 4B7 6E7 5E6 1B2 7A3 7C7 9H7 8F7 **a11 a33 p94r1 uIDGc4 a64 q5A q7H a63 cGc v3479r1** 5H3 **x1 s3Er** 1E3 **o126r5 q5I q8D bIc1** 7E5 **t4E5Ar dFc q4F** 7H1 9F1 8D3 4F3 6C3 6A6 5A1 4C2 4E1 1D1 2C1 1C5 3F5 3E2 3I1 3G3 3H4 2G5 5F2 5D4 6D5 6G1 4I4 5I5 8A2 8C6 7F4 9I3 8G4

278: 1A9 1H5 5I9 5H7 4D7 9B8 7H6 4F6 6F5 2F1 3G1 **a16 a94 cBc** 3B7 2I7 **c5r** 5C6 2A6 **h15 pBGc3 p52r8 u814r2 x3 cDc e52r8 r08 x4** 6D4 5E8 1D8 2G8 5G4 6I8 **eGBc3 bIc3 c9r s7Dr d7r q7C t1I3Er a23 o369r2 q8D bIc3** 9H4 **h46** 3E6 2E4 1B4 2C3 3D3 2D5 3F9 1E2 3H2 1G3 3I4 1I6 4B3 4A4 6C2 4G2 6H3 8A2 7C4 8C7 9C9 9F2 9E5 7B5 5A5 5B1 9A1 7A3 8E3 7E7 8D9 7D1 8I1 9I3

279: 2F5 1E6 4A6 4H2 6D2 9E2 1F2 2A2 1C7 6I7 7B6 7F7 9H7 **a29 dDc a81 p26r3 p48r5 a95** 4C5 **a41 d8r a93 c8r h68** 8G6 9D6 8D8 9I8 **e51r8 s3Hr u619r9 a49 o357r9 q6C t2C5Bc v1459r1 cGc d1b** 1A9 **b1r4 cHc q4I** 4G9 4I1 3H1 2D1 1B1 2C8 2E7 3E4 2B4 3D9 2G3 1H8 1I4 5A1 6A4 6B3 3A3 3B5 5B8 6C9 5D7 5E9 4F3 5I3 5H5 6G8 8C1 9A5 9B9 7E1 8E3 8F9 9G1 7H3 8H4 8I5 7I9

280: 1A3 5E2 9A2 1B2 3I2 7A1 9E1 3F1 3D9 7D3 3G8 1G6 2E6 **a14 a55 d2r p29r5 q2D** 1E8 **bIc7 t7G9Cr** 8G3 2H3 2G1 5H1 **uHCDc4 uBEGc5 uBFGc5 uCDHc6 a76** 5D6 **p58r8 a78 uBFGc9 a49 v2349r5 x5 x7** 4I6 6A6 8H6 7C6 **o178r4** 2I5 **q4A** 3A7 3C5 2C4 1F4 2D7 3H4 1I7 4H7 5G5 6F5 4A5 5C8 5F7 6B7 5B9 4D8 6I9 8C7 8A8 9C9 9D4 7E7 8E5 7B5 8B4 7F8 8F9 7I4 9H5 9I8 7G9

281: 1B2 4A2 9D2 5E2 **a25 a29 dEc** 7E4 9G4 1I4 1H1 5B1 9A1 **p15r3 pAIc6 u815r3 x8** 1C3 **b5r3** 3I3 **dCc** 2B6 **a17 b8r5 d7r p74r5 f6r p37r9 q1G q2I e82r8** 3E5 2G5 8H5 **eGFc8 q1G f4r e74r5 q3H cIc d6r q6D** 1D9 **bIc7 r18 s8Ar b7r7 f7b t6H1Gc x9** 3A9 3B7 2C8 1F8 2E7 1G7 3H8 2I9 6D8 5D7 4D6 6F5 4B5 6A3 5C6 6C4 4E3 6E1 5F4 4F9 4I1 6I6 6H7 4G8 5G9 5H3 9B3 9C5 7A6 8A7 7B8 8C9 7D5 9F7 8E8 8G3 9H6 7I7 7H9

282: 1D1 6C5 4G9 1C4 8A4 8B2 3A2 3B9 5A9 5E8 **a32 bIc5 d3r** 3E6 **fFc uCFHc6** 6B6 4H6 2H2 **pBHc1 p82r7 pBEc7 pDHc7 v2468r7 bIc7 s7Br u735r3 x3** 4F3 6D2 4I2 9E2 1F2 3F8 2F5 3G5 1G8 4A7 4C8 7A8 **a83 e93r7 oACGc3 cIc e75r1 cHc q9H** 8G6 9H7 7E7 3D7 1E3 2C3 1B7 3I3 3H4 6G3 5B3 6A1 5H1 5I5 6I7 2G7 2I1 7B1 9A3 8C7 7D3 9D9 7C9 9C6 7F6 9F4 9G1 7I4 7H5

283: 5D3 4H2 6G3 4B3 6B9 8B2 4E9 **a36 b4r1 uDBHc8 u259r9 p18r9 x9** 1D9 9F9 **o169r8** 6A8 5F8 5E2 3F2 1A2 6E1 **a44 bIc4 pFBc1 cAc pAGc5 s7Hr s7Hr u915r1**

s9Ar v1459r1 3A5 **h16 q9A w3D4** 3G4 2G6 2H9 3H8 1E8 2B8 9C8 7D8 8I9 5G9 5I1 1G1 3B1 2A7 1C4 2F1 2E4 3E7 3D6 1I5 5A4 5C7 6H5 6I4 9A1 4C1 4A6 7B7 8D1 7F4 7H1 8H4 9G5 8E5 7C5 8C6 9E6 7I6 9I7

284: 6G4 9G9 7E9 3I9 **a67 a87 a91 b3r4 dFc** 3F4 4D4 **u418r6 u518r6 a56 c4r f5r x3 x3 fBc** 9C5 **d4b a48 a68 s6Dr x3 d2b a26** 4B6 **p51r5** 2B5 **e63r5 c1r e41r1 q5F q7H** 2G8 **c2r** 1I4 5I7 **o158r8 x3 c6r a58 cDc r18 q1C** 7D8 1F8 3B8 3E5 3D6 1G5 3G7 3H2 5F5 6D3 1E3 2D1 1H1 2I3 5C3 5A8 6B1 4E1 5E6 5D2 6E8 5G1 6H5 4H8 9A1 9B3 8C8 8A6 1C6 1A7 4C7 6A9 2C9 2A4 6F7 4F9 7A2 7C4 7B7 9E2 8F3 9D7 8I1 8G2 7H3

285: 1C9 3G9 5F9 5I5 2H5 7F6 9D8 8H9 9E9 8E5 9A5 **b7r1 fAc pGEc1 t5G1Hc t1H9Ic u429r4** 6I4 9G4 **c7r s8Ar e85r7 x2 c8r x3 p83r3 x7 t4B3Ac** 6H3 7I3 7H1 4G1 **o269r2 o348r3 r08 cAc** 5D6 **cDc h36** 3B7 **q2B** 3A3 2B6 1E6 3I6 1I1 3D1 4B3 4A6 9C3 8A7 6C7 6B8 5A2 4E7 4D4 2E4 1A4 2C8 1G8 2G3 1F3 2F7 1D2 2I2 1H7 6F2 6E1 4H2 5G7 9B2 8B1 7C4 7A8 9F1 8D3 8G2 9I7

286: 3B3 5E9 4H3 6A3 1B6 2B5 1D5 7E5 **a29 bIc6 c6r oCFGc1 cHc** 9I9 1G9 **p15r4 u258r7 o367r7 dFc x4 t9F6Dc v1568r4 b2r4 cDc** 8A9 **e86r4 c5r dAc a42 q3G** 5A7 3C7 1A4 2A2 3E2 2E7 2F4 3D8 3F9 1I2 3G4 3I6 4F2 6C2 6D1 4E4 6B4 6E6 5I4 4G6 5H1 2I1 2H8 4C1 4A5 5B8 6G7 4I8 8B1 9C5 7C4 7A8 9A6 9F1 8D4 7F7 8E8 7D9 7G1 8H2 9H4 7H6 8I7

287: 4B3 5D9 7G9 4F1 **a23 a82 a86 cDc d1r d8r e82r4** 5F4 **a52 a53 d6r a57** 2E4 3I4 8H4 3D3 6F3 6D2 7F2 **gCc a75 i46** 7A5 9A9 3C9 **a16 pDIc5 t1G5Hc x5 s4Ir s9Hr x8 u179r8 a28 o368r8 s4Ir q1I** 5I3 7H3 2G3 **eIDc5 c4r eHFc5 q1G** 3G8 7I8 6H8 4D8 1F8 3F7 2C7 1B2 3B6 3A1 1D5 1H1 2H2 3H5 1G6 1I7 5C1 6C5 5A7 5E5 4E6 6E7 5G2 4I5 5H6 4G7 8B1 8C2 9C8 7C6 9F5 9D6 7D4 9B4 7B7 8E8 8G5 9H7

288: 2F9 6E5 7B2 8B9 1F3 8D3 **a62 a95 cGc c7r** 7A5 **c5b bIc2 c5r** 5I1 **fHc h34 p73r1 t7C6Ac u915r7 x1** 2D1 4F1 6D2 4H2 9F2 8F5 9H5 9C4 **a96 o159r7 t3I6HC p72r6 u234r6 v2347r6 q3I** 1G4 3I6 3G9 2G2 3E2 2I3 1I5 2B5 2C6 1D6 2E7 3H7 1B7 2H8 5A7 5B8 3C8 3B1 6A1 4B6 6B4 5H3 4E3 5E4 4I4 6H6 6I9 7C1 9A6 8C7 8A8 8E1 7E6 9D7 7G3 8H4 8G6 7H9

289: 3H7 2H3 5H8 8E7 **a11** 1G1 **a49 a55 a88 a95 cGc** 5E5 **f2r fEc** 3D3 **g8r fBc h89** 2I8 3E8 2E9 3G9 8G5 **p94r3 s1Hr s2Dr u736r4 oABIc4 p29r4** 8D1 **a84 q9C** 1E4 3I4 2C4 2B1 3A5 9C1 9B5 9D4 8H4 7I9 8C9 2F5 **r08 eIFc6 p94r2 t8B4Ac b4r2 d6r a43 u716r2** 9E2 4D2 1F2 2D6 2G2 1I6 1H5 6F6 6E3 4E1 6I1 6H2 5C2 5B7 4I5 5G6 4H9 6B9 6A4 7A2 7B4 7C7 8A8 8B6 4A6 4B3 9A3 8F3 7F8

290: 4A6 8C1 7G6 3I6 2E6 2D1 5E1 **a75 a79 c7r c9r f6r cDc h39 oADGc7 cFc a84 a54 q1D** 2A2 **cEc** 7A3 9A8 **d2b pAHc5 q5C s3Hr uGDEc3 a33 w1H4 x5 cIc a94 p63r4 a14 cBc t4I6Br** 5C2 7B2 7C7 **e52r5** 8I5 9I3 6I2 9F7 4F8 **dGc q4I** 4C5 5F5 3E5 1D7 3B7 3C4 1B9 1A5 2F4 3F9 1E3 3G3 3H2 1I4 1H1 2G5 1G8 6A7 6D3 5D4 4E7 6E9 4I1 6B1 4B4 6G4 6H5 5G7 9B5 9C9 8F3 8D9 8G2 9E2 7E4 8E8 9H4 7H8

291: 9B8 8H5 9H4 **a91 fDc** 5D2 **a58 dGc** 9G2 3H2 **a33 bIc3 g5b d6r a44 pEAc9 q8I o149r7 t1D3Cr d2r** 2A2 4C2 4B4 1C4 6I2 **dAc eEAc9 u517r5 a55** 7C5 **cBc pBDc1 q5C q5G uDCGc6 a26 cDc eDBc1 x1 a51 s7Fr** 8G9 **q7G** 9I1 7G6 4I6 6G7 1I7 2C7 3C8 1B6 3A5 2B1 1A9 3F1 1E5 3D6 1D8 2F9 2D3 1H3 2G8 6B5 5C6 4A1 6A3 5F5 6E6 5E1 4E3 4F7 6F8 6D4 6H1 5G3 4H8 8C1 9A7 7B9 7D1 8F4 7F3 9F6 8D7 9E9 8I3

292: 2D4 1E8 2F9 2I6 5E5 5D9 4H5 6G9 8F8 7H8 4I8 5C8 4G7 8H9 **a37 a64 c1r pFBc6** 4C6 5F6 **cDc q4A s2Cr s3Fr x1 x2 c2r oCEIc2 c9b d8r b8r1 q5B uCFIc1 a11 uCFHc3 bIc3 v4578r1 gBc v1478r3 c6r x3** 2E3 2C1 **q7D** 7B2 6C2 4A3 3C3 3B4 1B6 2B7 2A5 1A2 3E6 3F1 1D7 2H2 1G3 3H7 5B1 6A4 6B5 4D1 6F3 6I1 5G2 5H4 8A1 8B3

9C4 9E1 8E2 7D3 8D6 9F7 7G1 9I2 9H3 8G4 8I7

293: 6A7 5E6 5F9 1E3 **a21 bIc6 c4r c6r cCc** 5A4 3B4 9C6 1A6 2A1 1D1 **c3r dDc c2b cFc p68r3 eHBc3 p38r7 r38 s5Ir a62 t3G1Cr uHBDc8 x2 x5 f8r oBDHc8** 4I9 **c7r h14 fIc a97 x2** 3A2 2B5 1C8 2C7 1F2 3E5 3F7 2D8 3G8 5C2 4B8 6B6 4A3 4D2 5D3 6F5 6I2 6H3 4H6 5I8 5G5 1I5 1G7 8B3 9A5 7D5 9D7 8F8 9F4 9G3 7I4 8C4 7C1 9I1 8E1 7E2 9E9 8G2 2H2 2G9 8H5 8I7 9H8 7H9

294: 5F7 8E7 **cHc** 6H9 4H6 **fCc** 1C9 **g9b pEIc1 p58r3** 9I3 **q9E dGc cGc p26r4 s6Er u726r4 uADHc8 x8 t4A6Ir oBCIc4 uFBIc5 a25 x5 dBc x8 c3r** 1F5 **x2 x2 x8** 4E9 **t4D6CR bIc5 q4G** 2B4 1A8 1G4 3I2 1E2 2I1 6F2 6E1 4D8 2E8 3H8 6C8 4A4 6B5 3A5 3B3 5C3 4B2 5D4 5G1 5H2 6G3 6I4 4G5 8A3 7A1 7C4 7B8 8D1 3F1 2F6 3C6 2C7 3D9 3G7 2G9 9E6 7F9 8G2 9C2 8C5 7D2 9D5 8H4 7I5 7G6 7H7 9G8

295: 2E9 5E8 5H6 3G6 1D6 3H1 **d1r a32 d4b** 4I1 **fEc a81 q3A q3E q3I** 5A1 **s6Fr t2D3IR u934r4 p57r4 f9r o349r4 c1b x3 x4** 3A4 1C8 2B1 2F4 2D8 3E3 3I8 4E4 6E7 7C1 7B4 6C4 5B3 5I4 8C3 9H4 8H9 9A9 2H2 **eIAc7 h12** 9E1 1F1 1E2 **pFBc2 r18** 4A2 6F2 4D3 6I3 2G3 9D2 8B2 9F3 8F8 7A8 8A6 6B6 6A5 1B5 2A7 2I5 1H7 4G7 4H5 9B7 7E6 8E5 7I2 7G5 8I7 9G8

296: 4B2 7H2 8G5 9D2 2E2 **a71 pDHc1 pIBc6 pCFc9 u579r9** 4G4 2G1 9I1 4D1 5H1 **o579r9 q1A b1r4 q2C eIBc6 c3r** 3E1 1C1 8B1 **a78 d1b p34r7 s8Hr uHCDc3 pIBc3 u735r4 uDCHc4 x3 fAc b4r7 f6r a68 eIBc3 t5E6CR** 9G9 8I8 5G8 9E8 6F8 1F4 **bIc5 dEc eEAc3 q1E** 2D7 3A7 2A5 2B8 1E3 2C3 3B4 1A6 3F5 2F6 2H4 3I6 6C4 6B6 5B7 4A3 5A9 6D3 5E4 6E5 4F9 4E7 5I3 4H6 6I7 6H9 7B3 7A8 8C9 7D5 8D4 8E6 8F7 7E9 8H3 7I4

297: 5B2 6C8 6F1 5E5 8C1 9A5 7A2 **a59 bIc6 fGc** 4G5 4B7 9C7 **a38 d5r pAHc6 pAIc9 a39 q8I** 1B9 2I9 8A9 **u925r4 t1F9Dc f3r h12** 3D1 1F2 1G1 3G2 9D2 **s2Er** 2D4 1D8 1E6 **e62r6 cHc d3r pCDc3 a53 q2E s9Gr p37r3 a73 u926r3 oAEGc3 dFc x4** 1C4 3C5 2A6 3B3 2E3 3F7 3H4 1I5 3I6 2G7 2H8 5C6 6A3 4D6 5D3 5F9 4I3 5G4 6H6 5H7 6G9 7C3 7B4 8B8 8F3 9F4 7F6 8E7 9E8 7D9 9G3 8I4 7G8 9H9

298: 1E9 5E3 5D8 9E7 8E8 **cHc f7b a71 c9r** 9G5 **p73r8 e91r8 q7H** 3H9 **p63r7 r38 u158r2 a12 d1r** 9H6 7C6 9A8 3C8 1H8 7G8 **e63r7 q6B q2A** 1C1 **u427r2** 6E6 4I6 1F6 1I5 **c3r oDEHc2 s6Gr t6D4Cr a44 u428r5** 6D9 4C9 **c6b q5F** 8C5 **dAc x4** 8F2 7H2 6G2 5A2 1B2 1A3 5C4 3B4 2A5 3A6 2C7 2E4 2D2 3F5 2G6 2I1 3G7 6B5 6A7 4E2 4F4 4D5 5F7 5G1 4H7 5I9 9B3 7B1 8A4 9D1 7D4 8I3 9I4 7I7 8G9

299: 7F5 8E9 7I1 8G7 2I7 3B7 **c7r d2r** 6E2 5G2 2G8 **p35r1 pCFc2 d1r pHBc8 s9Ar u419r3 a43 u427r4 d6r a65 dFc c2b eFCc2 p26r6** 4B3 **q6F t4E6GR eDAc1 x6 cIc eIAc9 d4b mCc f7b o169r4 q1C** 2B6 1C2 1A8 2C4 3A1 2E1 3D2 1F4 2H2 6C1 4C7 5A9 5D1 5F3 1D3 3F6 1I6 1G5 4E4 4D6 6F7 4G1 6G4 4I5 6H6 5C6 6B8 6A5 5I8 4H9 3G9 3H3 7B2 9A4 8B5 8A6 9C8 8C3 7C9 9F2 9D7 7D8 9G3 7H4 8H8 9I9

300: 3C2 2F9 1H2 2G4 2I3 5F2 6E4 5D8 4D9 7A4 5C4 8C9 7E2 7I9 5H9 **a16 a86 b2r1 cFc a27 oCFHc7 pDHc5 u517r5 v1578r5 fAc a73 t5A6HR d4b x5 x8** 3A6 2H6 9D6 **a38 a81 e42r5** 3E7 **q7G** 7B8 2A8 2C1 1B5 1F8 3D1 2E5 3H5 3I8 6D5 4E3 5B3 4B6 4A1 6F6 4F7 5A7 4C5 6G3 6I1 1G1 1I7 5I5 5G6 6H7 9B1 9A3 8A5 9C7 7F1 8D3 7D7 8E8 7G5 8I6 8G7 9H8

301: 3E4 2H1 2I9 9B4 6C4 8B1 7B9 9E1 9H9 6I8 **a77 cFc** 2F2 2C8 5B8 3A6 4B6 **a28 c3b f8r h39** 5F9 8E9 8F3 **pAGc2 pIDc6 a86 p24r7 r08 q9F** 3H8 **b7r8 uGAFc5 uHCDc5 oAFGc5 x3 fGc a67 q4A q6H e51r3** 4H7 **q4G o167r2** 8C7 8D6 **q6B x5** 7E8 1D8 **e61r5 q5E** 1I6 2E6 2G7 7H6 5G6 6H2 4A2 5C5 6B3 1C3 1B2 3B7 1E7 3F5 3G3 1H5 5E2 4E3 6E5 5D7 5H3 4G5 7C2 9A5 8A8 7D5 9F7 8G2 7I7 9G8

302: 2B4 3E6 1H8 1G6 6A8 9C8 7E8 1F5 5C1 **a17 a33 a46 a94 c8r d7b s5Br x9 c4b**

d4r a54 pBHc7 uDBHc7 v2348r7 7A6 4B6 9H6 6I6 8H4 8B5 7B1 8D1 3F1 1B9 **a97 h49**
4I4 5A4 4A9 **r18 r18** 5E9 **oAEIc3 bIc3 q6F** 9G7 8A7 3C7 1C2 3A3 2I3 1D3 5B7 4C3 6F3
6D4 4F7 2E7 5G3 6H7 6G9 9B3 8E3 9F4 7D7 7F2 3D2 2F9 2H2 5I2 5H5 3I5 3H9 9D9 7G5
7I9

303: 1D9 7F4 8C4 5B4 9D2 **a49 a79 d7b f6r t2B1Gr** 3B5 **uADHc1 uFCHc1 x1**
2C1 1C3 3D1 6H1 1F7 3A7 2G7 6D7 5C7 **p72r3 a23 c3r p18r6 u518r6 a66 s4Er pFIc5**
x5 5A1 4F1 **u834r8 x8 q3H c6b cGc e95r5 e76r5 o158r6 s8Gr** 9G9 6I9 6G4 3I4 3G3
7I3 **q7E q9I** 2F3 5D3 8E3 7E7 9F5 6E5 4A5 4B9 6C6 4E6 5F8 5I5 4G8 7C5 8A6 2B6 1A2
3H2 2E2 3E8 1G6 2I8 5G2 5H6 7B2 9C8 7A9 8D8 8G5 9I6 8H7 7H8

304: 1C6 8H4 6I4 8E6 3I9 2B9 3E7 5D7 6C7 9D9 8D8 4E8 **d9b a98 f9r p84r3 p51r4**
a24 pCGc5 u925r2 a92 uHCEc5 9G2 **a95** 6E5 **x1 x3 x3 s9Ar x1 t5G4BR** 5E2 7D2
c2r r68 9C5 7H5 9H6 7A6 **q4A** 4B5 5G5 **eGDc1** 1B2 **o257r1 q3B** 5B1 4A4 3B4 5C3 3A3
2C1 2E3 5F4 1D4 3F1 2F2 1F8 1G1 3H2 1I7 1H3 2H8 4D1 6F9 6H1 4G3 5H9 9A1 8B3 9B7
7B8 7E1 9F3 7I3 8G7 9I8

305: 3I1 6F1 5H2 5B8 7A8 6C5 4I5 4C9 **a54 b5r3 c3r d1b fEc q3B** 6G8 **s9Gr t3H1Cr**
uDCGc2 x2 x2 x7 pGDc7 4F6 **a57 eGDc6 c2r cIc c2r h34 oCFIc7 q1C** 1I2 3H7 1C7
2C8 3B2 2D2 3D8 1H8 2G6 4G7 6D7 4D4 6A4 1B4 4B3 6H3 2I3 2H4 8C2 9B7 8B1 9E1 7F2
8E4 8F7 9G2 8G3 9A3 9I4 7H6 8D6 7I7 **r77** 2F9 3A9 1A6 2B5 1F5 1E3 3E6 5F3 8A5 7B9
9D9 5E9 5D5 7E5 9H5 8H9

306: 2B1 2A3 5B6 5H4 5G9 1H9 1I1 2I6 4H1 9B9 **b5r3 d2r** 1D7 **f8r** 8E3 5F3 5D1 8F1
8D9 2F9 2D4 **pCGc7** 3H7 2C7 4B7 6B3 4I3 **a15 cAc pHDc5 p37r8 r58 a28 x2 c7r** 8H6
o128r2 4F2 **uDFIc5 v1245r5 q8I** 8A7 9G7 8I4 **h46** 7F4 9A4 7A6 9E6 1F6 3F8 2E5 1E2
3B2 2G2 3I5 6D5 5E8 4A8 1C8 1A5 5C5 4G5 6I8 6H2 8C2 7B8 9F5 9D8 7D2 9I2 7H5 8G8

307: 3A4 3G5 **a76 bIc7 cHc** 3I7 2C7 **c9r d7b** 7C6 **fBc** 8B7 **c4r d4r gAc e91r9 p86r4**
t9E7Ir pCFc9 u628r3 fFc a59 x8 3E2 1H2 3H1 4F2 6I2 5I1 6D1 2F1 **cDc a88 e86r4**
r68 5A7 4E7 6E6 4A6 **a48 c6b v2479r8 q7G** 8I9 9B9 3C9 2B8 2A2 1A5 1B1 2D5 3F8 1E9
6A9 6C8 5E5 6F3 5D4 4B4 5B3 4D8 5F9 4G3 6H4 4I5 5H8 7A1 7B2 8A8 7E3 8F4 9E8 7D9
8H3 2I3 2H6 7G4 9H5 9I6 7I8

308: 3D1 2E4 4C8 6H5 5E5 9A4 7F6 8G8 1F9 2F5 9D5 **a26 a41 a43 b5r2 dCc** 3C5
7B5 **d1b a17 c1r f6r h13 cAc p15r4 t9F8Ar u968r9 uHACc9 s4Ir x7 q6E** 9G3 8F3
7C3 6A3 6C1 8A1 9F1 4E1 6E6 6D7 4F2 6B2 8D2 7I1 6G9 **g3b e43r4 cGc eGAc7 fIc**
o257r9 q7H 1H7 2C7 3B9 1C4 1I2 3G4 2I6 1D6 3A6 1A8 2D8 3H8 3I3 2H9 4B4 5A7 5C9
5G2 4H3 5I4 4G6 4I7 8B7 7A9 9E7 8E9 7H2 7G7 9I9

309: 1C8 1G5 6A6 **a55 a67 a82 a87 d8r a75 b8r1 b8r9** 7E8 3F8 2F6 3B6 6D8 4G8
5G7 5I9 6H2 3I2 8C6 9H8 3H7 **a53 c9b dFc a24 h27 dDc pICc3 p81r4 r38 s1Hr u623r4**
5C2 **cAc c1r e81r4 o236r4 t6B9Cc pCHc9 x9 q1D** 1B4 9A4 6C4 6B5 4C3 4B7 5A1 4F1
5F4 5E5 5D3 2E3 3E4 1D9 1H3 2G4 2H1 3G9 6G3 4I4 9C5 8D1 8F5 8E9 9G1 7B1 7A2 2B2
2C9 1A7 1F2 2D7 7C7 9B9 8B3 9D2 9F7 9I3 8H4 7H9

310: 8G1 4B1 **a19 a32 a44 a95 cEc d5b f8b p28r5 p61r7 q6D g5r s2Br uGBEc7**
uDCHc8 x7 x7 dCc 5B3 5A4 9B4 9A8 8D4 **a48 a76 b9r2 o156r8 cDc cDc cFc t3F1Hr**
6H4 **d6b e84r7 e61r7 f2r q8C** 7A2 8H2 7E5 8F7 5E7 6D1 1E1 4F8 1D8 5I1 5G5 6I7 2G7
1C7 1A9 2C5 3B6 2B8 1F5 3F3 2F4 2D6 3E2 2I2 1H3 1I4 3G8 3I9 4A7 5C9 6C8 5F6 5D2
5H8 4G9 8A5 7C6 8C3 7B7 9F2 9E6 9G3 7D3 9D9 9I5 7H9

311: 3B7 8B1 8I3 5H1 5C3 **a57 a67** 9G7 **a75 a98 a99 c5b** 4F7 6I7 **d9r dAc** 4A8 **dDc**
a24 s4Ir uGCDc4 u856r5 uDAIc5 2F5 2A3 1A6 **a22 p52r6 u825r6 v1469r4 q6A x6**
q5G bIc4 c4r q6H 9H9 **c7r** 7E7 8C7 **o479r5 c8r q9I** 4I6 5E6 3F6 3D2 1D9 1F3 6D3 6F1
4D5 6H5 5B5 4B2 5G2 2H2 2G6 3G9 1I4 2C4 2B9 1B8 3E4 2E8 3I8 6A9 6B4 4H4 9A4 7A5

7C9 9D1 9F2 8E5 8D6 7D4 7F8 8G4 9I5 7H6 8H8

312: 1H5 3I2 4C5 6I5 5E5 9H2 **a23 b7r1 bIc8 b8r8 c6b c5r h34 p72r6 t5F3Dc uAHIc8 x8 s1Er d3r b3r6 cBc cGc o248r8 r78** 4E6 3F6 3D3 3E4 5F3 6H3 5H4 8F4 4F2 7D2 4D4 4B3 **a88 gAc e91r6** 2B9 8B1 **s2Ir bIc7 q8A** 6G8 5D8 4A8 3B8 5B7 4I7 3G7 **q2H** 8H7 8I8 2H8 1G6 2A6 1C7 1A3 1B2 2D7 1E1 2I1 6A2 6B4 6E7 6F9 6D1 9C3 9A4 9B6 7A7 7C8 8A9 7F1 9E8 7E9 9G1 7H6 9I9

313: 3E6 3I1 3H2 1G8 5B2 6A8 6C6 4D1 5F8 7B1 9H6 7A6 1B6 7I8 8H9 7D2 **a47 a49 a65** 4E2 6I2 **bIc4 eFCc5** 2I5 4G5 4I4 7G4 **cFc d8b j79 pEBc4 a74 u934r9 a79** 3D9 **c9r dEc oCEGc3 q3F q1D v3467r7 t2B4Ac x7** 3A7 1A4 3C5 2A3 2B9 1D5 2E7 3F4 3G3 2H4 1H7 4C7 4A9 5E5 5D7 6E3 6F9 5H3 6G7 7C3 8A5 8B7 9B4 9C9 9D3 8E4 9F5 7F7 7E9 8I3 9I7

314: 1B1 2E2 4C4 5I4 6G6 9C8 8F4 1D4 8E5 1F5 2I8 2H5 5B8 5A6 2C6 7B6 5D5 **a13 a73 a81 eGBc9 u628r1 s4Ir uDEHc1 x1** 4F1 **c4r c6r q4G** 6H1 **v2468r3** 1G7 **h38** 1E8 3A8 1A3 **bIc3 p48r7 a77 q2D q2G** 3H9 **c9r d9b o359r7** 7F2 8A2 8C7 4A7 6A5 4B9 6C3 5F3 2D3 3I3 2G1 6D7 4G3 4I5 5H7 6I9 8B3 7A9 9E7 3F7 3D6 3E1 7D1 7E3 9F6 9D9 8I1 9I2 9H3 7I7 8G9

315: 3C7 2F1 **a65 c9r bIc6 fHc f4b** 8B1 **g8b a86 f7r h16** 5H6 9G6 9H1 5C1 **a42 d6b a67 a97 d6r e86r4** 1H4 3H9 2H5 2G7 7H7 **bIc9 c4r k195** 6C9 4A5 4C2 4E9 6E1 4G1 6G5 **o259r2 pCDc5 a25 cDc q5G u715r3 a93** 7F5 8C5 **s2Ar dAc q3A t1I3AR x8** 1C8 3A6 1B3 3B5 2A2 3E2 1D5 2D6 3D8 1F9 3G3 1I6 2I8 6A3 5B4 5F3 5D2 4F8 6D7 6I4 4I7 5G8 7B2 8A4 7C6 9A8 9F2 8D3 8E6 8F7 7E8 9D9 8I2 7I3 7G4

316: 1E9 3D6 1A6 2H1 4E3 7F1 9C1 6A1 5E6 **a24 a37 a87 dCc** 7B7 8B6 **eFAc9** 8D5 **p28r3 q9E t3C2Ir e73r3 s8Ir** 7I6 6H6 9I5 **t7D9GR x8 d6r** 5D4 **u168r4 x8 s4Fr** 5C7 3A7 1G7 **c4b dFc o168r4 r38 a65 f4r eGCc2 u245r5 a25 x8** 4A8 6B9 6D8 4F9 6E7 5F5 2E5 4G5 6C5 3B5 2B8 3C2 2A3 1C4 3F8 2F4 2I2 3H3 3G4 1H5 4B4 4H2 6I4 4I7 5G8 9B2 7C3 8A9 8E2 8F7 9E8 7D9 7G2 8I3 8H4 7H8 9G9

317: 2B9 1F4 3I8 6C8 4E8 6E4 5E9 4H4 9A8 9I4 7C4 9G9 1H9 1I6 6H6 1C1 3G3 2A3 2I1 **a62 pCFc3 pIAc5 uAGIc2 v1469r5 x2 x5 s8Br c8r** 8H3 **e85r5 uBEHc2** 7A6 4B6 5D6 **a47 oAGIc2 p14r5 q1D** 2E2 2H7 **t6D9Fc bIc5 q4D** 3H5 1D5 1G2 3B2 1A7 5C7 6B3 5A5 5F3 5I2 4G5 6F5 6D2 5G1 8A2 9C3 9B5 8B7 7B1 8E1 3F1 3E7 4D1 4F7 9F2 7D3 7E5 9D7 7H2 8I5

318: 1B1 2F8 3A8 4C4 6I3 2H3 4I1 5H7 8D3 7B8 6C8 6F7 **a12 a19** 2I7 3D7 **a76 a81 dGc** 4G8 8H8 **bIc2 q9H t2D7Ec u437r6 oEFHc6 x5 cDc u925r9 a89 uADGc9 a79 a49 s7Fr a85 c7r c8r** 6A1 5D1 **v2568r2 p91r2 a22 q3E** 7I2 3H2 2G6 3E6 1H5 2D5 1G4 3I9 4H6 6D6 8C2 2B2 2C9 4A2 5B9 6B5 5C6 5F2 4F5 4D9 1E9 1D2 6G2 5G5 9C1 8A5 9B6 8B4 7A9 8F1 9E2 7E5 7F6 9F9 9H4 8G9

319: 3H4 5H3 7B4 9F4 8E3 3F3 1B3 7G2 9G3 5D4 5E6 6E2 3D2 2B2 5A2 8H7 5I7 **a36 a98 c4r** 4G4 6C4 **a49 c5b d9b uGBFc9 uIDHc9 oBFGc9 t1G9Ic** 2E5 **cDc a81 p91r5 a35 r08** 1G5 9I5 **x1 pGBc1 a41 cBc s1Ar dAc v2568r1** 7E1 7F7 4E7 6A7 1C7 3C9 3A6 2C1 3B5 1A8 1D1 2F9 3E8 3I1 2H8 2G6 1I9 4C8 5F1 6B1 5B9 6F8 4D9 4H1 6G9 9A1 7A5 8C6 8B8 8D5 7D6 8G1 9H6 7I8 7H9

320: 3B9 1B1 1G7 8B4 9B2 5G1 8G5 2H5 9C5 9A7 5C7 6E7 2E4 **a16 a78 c3r** 2A6 **bIc6 p26r2 eGDc2 p75r9 t1I9HC x8 c6b u426r8 v2346r8 x3** 4D1 **q4C q8C** 7B8 **bIc3** 6A4 **c5b dFc u714r3 o569r3** 8C3 1A3 2C8 2D3 1E2 2G2 5A8 4C9 5H2 6D2 5D6 6B6 5B3 5E5 5F9 4F4 4H3 6F3 4E8 3F8 3E6 5I4 3H4 3I1 6G8 7A9 8F2 7E3 9E1 7D5 9F6 8E9 7H1 9I3 8I6 1H6 1I8 9H8

321: 6A8 9C2 7H1 3A2 8A1 1A7 **a64** 4E3 3D3 **a77 d4r fFc g5r h17** 4C7 5B1 3C1 4F1

5F7 **pAIc3 p52r5 pAFc9 a29 uGBFc5** x3 x6 x6 x9 7A9 2A3 **bIc3 c9r q3B t1F3BR dHc bIc5 d2r fGc c8r e83r6 e71r6 d6r oBFGc5 q8E** 6E6 1F6 3B6 1B9 2C5 1C4 2F9 2E2 2I4 1G5 1H3 2H6 3I9 3G7 6B5 5C3 6F2 6D4 4D5 5D8 5E9 5G2 6G3 4H4 5H5 4I8 9B3 7C6 8B7 8E4 7F5 9D6 8D9 7I3 8I5 8G6 9I7 7G8 9H9

322: 3B6 3C9 2H6 5I7 5A9 1I1 **a17 a35 a58 cAc c8r c8r** 7E9 3E7 3D1 **fGc pIEc4 uEAGc2** x4 **t4H3Gc p39r4 s9Hr fHc b9r4 u137r4 uEAGc4 a54 dDc dEc oAEGc2 v1379r4** 2C3 5C8 4D8 6C1 4E1 6E4 4G4 9A1 7G1 7H4 2I4 1C4 1B7 2A2 3F4 1F3 1D2 2F8 2E5 1H8 4A7 8A4 7C7 9D4 8D5 6F5 4B5 6B3 5E2 5D3 6H2 4H3 3G3 3H5 5G5 6I9 8E3 7D6 9F7 7F2 9B2 8B9 7B8 8G2 9G6 8I8 9H9

323: 2C3 3D6 2D1 1G8 3H7 4C7 1A7 7F7 9G7 7G1 **a34 bIc4 cIc** 2I4 5G4 **e86r3 x6** 1B6 4G6 7I6 8H3 5I3 6F3 7E3 **p15r2 p74r9 a59 uAEIc9 v2467r9 b8r9 c8r** 8D4 **oACEc2 s6Dr pDHc5 a65** 9H4 7B4 3C4 **a72 q2G p76r2** 4H5 **a62 cDc uCDIc5 a45 oBFGc5 q1C** 1I5 2G9 6H9 6G2 7H2 8F2 1E2 2B2 3B5 3A1 1C9 2F5 3E9 3F8 4D2 6D8 4B8 5E5 6C5 6B1 4F9 9C1 9A2 5C2 5A6 8C6 8A9 9D5 9E8 7D9 8G5 9I9

324: 1A4 3F3 2D8 4B8 5I8 9E8 7E1 9G1 8C1 3B1 6A1 9I4 8I3 1G3 3E4 **a96 b8r6 b8r7 o136r5 p49r2 s5Ar x9** 7G7 **a99 pBEc7 t7B4Ac cCc a46 e94r2 u529r7 v2589r7 b3r7 t1I3CR bIc9 q3C a55 q6D** 2A5 1B7 2F7 3D9 1C9 3C2 1D5 1E6 1I2 3H5 3I7 2G9 6C5 4G5 5F5 5D4 7F4 8D7 8F6 6D6 4F2 6B2 4A3 6H3 4I6 4H7 6E7 4E9 6I9 9A2 7B3 9C7 5A7 5C6 7A6 7D2 9F9 9H6 7H9

325: 5B3 6C7 3B7 6G3 5I7 4I8 8A8 7H8 9D8 9F3 3D3 3A2 2E2 **pBIc1 pBIc9 q4F q5H uAEFc4 a44 s4Cr oAEHc1 x9 q9C a99** 9E7 1F7 8G7 **p58r6 v3458r9 bIc9 c4r x5 x6 q5H s2Ir uDAIc5 u124r5 c3r e83r5** 7E4 4F4 6A4 4C5 1A5 5A1 4A9 5E9 6D6 4G1 6I5 5H6 8H5 2G5 3E5 1E1 3F6 7D5 8E6 8F9 7B9 3C9 9C1 2B1 3H1 8C2 7F2 7I1 9G2 7G6 2I6 1C6 2C4 1D4 2D9 1G9 9I9

326: 5C5 5B8 4C6 5F4 6E9 4H1 6G5 5G6 **d3r** 2I6 1I1 **a11 b3r7 cBc e73r8 cIc oBFIc3** 1E5 2H5 **a34 p47r2 r28 c3b r28 u735r2 a82 uGBIc2 cHc pHFc9 v3457r2 a72 q7B b7r7 x3** 2A3 2B4 2C1 1C7 3A8 1B2 1F3 2D9 3H2 3I4 2G7 1G8 1H9 4A2 6B3 5D2 4E3 6I2 5H3 8C8 9C2 7E2 9D3 7F7 3E7 3D6 3F1 8D1 9B1 8B6 7B9 7D5 8A5 9A7 7A4 9E6 8F9 8G2 8I3 9H4 8H7 7I8 9G9

327: 2C2 5C8 5A9 4F9 4E8 8B1 9F8 3D8 1D9 2G8 3H9 8I9 9C9 **a21 a26 c2r** 2H7 **a25 cFc dGc** 5H2 **f6b a64 h16 pHCc3 p39r4 d7r o147r4 q1C q2I** 4I4 4H6 1G6 **h57 q9A a73 c4b dBc** 9B2 8G2 7D2 **a76 pCDc7 r08 f6r s8Dr v1268r5 x3** 2A3 1C5 3B4 3G3 1H4 1I1 2I5 6B3 6A4 4B5 5B6 6C7 5E4 6D5 6E6 2F6 2E1 5F1 5D7 6H1 5I3 5G5 4G7 8C3 7C4 8A5 9A6 7B7 9E3 7F5 3E5 3F7 8D6 8E7 7H3 9G4

328: 3B9 1H8 4B5 5C8 4E8 8A9 9I8 1A6 **a72 bIc6 c5r dCc** 7C1 **f2r a25 dEc bIc5 t3F1Gr a34 gGc t7H3Gc c3r u635r2 x2 x3 p74r3 t4A6Ir v2467r3 x7** 7D5 1F5 7F4 9B4 1C4 **oAFIc2 dHc a63 p18r1 p76r7** 5I7 4H2 6F2 1D2 3I2 1G1 3F1 5A2 6E9 2D9 2E6 5E5 4D6 4I1 6I3 4A3 6A4 6C7 1B7 2C3 3D7 1E3 3G3 2H7 2G5 2I4 4G4 6H5 5G6 8B3 7A7 8E1 9D3 9E7 9F9 8F6 9C6 8C2 9H1 9G2 7H3 8G7

329: 3I9 6B9 5H7 6I8 9F4 8B4 5A4 1C4 3H4 9D9 7I3 9G7 7B7 5E5 2F5 1F9 2A9 **a18 a32 a96 c9r e95r1 p63r3 a23 t7F9BR u289r2 uGADc5 a65 dHc s4Hr x1** 6C5 4G5 7A5 8D5 9H5 8H8 9C8 **x1 q4F q8G oBEIc2 s1Gr eHCc6 cEc h68 cDc q1B** 1H1 **r48** 3A1 1A8 2B2 1B3 2C6 2E1 3F2 3D3 3E8 1D6 1G2 2H3 3G6 5B6 4C1 4A2 6D1 4F3 5I1 6G3 4H6 9B1 7C2 7F1 8E2 7E6 7D8 8G1 9I2 8I6

330: 2D5 1F8 3G3 3H7 9E9 3F9 9D7 5E7 5D4 4I7 6C7 6G8 9B3 8E3 4B5 5G5 **a22 c7b e41r9 pHFc6 s3Cr uABIc1 fCc** 3E4 **o349r6 b7r6 r18 a81 x1 x1 v1379r1 cGc c3b e81r4 q1C** 1G1 3D1 2E6 3C6 1E2 2G2 1H4 2B4 2A1 1C9 2I9 5B1 5C8 4C2 5A9 6A3 5F3

6F2 4D6 6H1 5H6 5I2 4G9 9C1 8C4 7C5 8A6 7B8 7E1 8F5 7F6 8D8 7D2 8I1 8H2 7G4 9G6

331: 1H7 4C5 6C3 8C8 7C7 8D4 7A4 1C4 6B4 4E4 5G4 2H4 7I5 8H9 9B9 4H6 4G1 6F1 **a12 a42 a46 c9b d8r p63r8 p51r9 s2Gr pGFc6 u247r3 cGc g2r a38 o247r3 t3D2BR v3569r6 w1F3 x6** 2F6 2D8 3E3 3D5 2B5 2G3 1I6 5F8 5D7 6E9 1F9 1E2 6D6 6G8 3I8 2I1 3A1 3C6 2C9 2A2 3G9 5C2 5A6 5I9 8A5 9A3 8B6 7F3 4D3 4F2 9D2 9E6 8F7 8G2 8I3 7G6 9G7

332: 1E4 1G8 1C5 8D3 9C3 3D6 **a64 c4r** 4A4 4B5 **d5b a52 f8r** 7H6 9E6 **a88 e73r7 fGc h37 fHc o168r2 p96r1 pDHc9 pIAc9 t8E2Fc v3479r9 pEBc9** 7C1 9I1 **a79 t6E7FC uAEGc1 uBEGc1 a41 q4C** 8C6 8B8 9B4 7B9 8A7 3B7 9F9 6D9 3E9 2E1 1A1 2A9 2B6 3C2 2F5 1D2 3G1 2G2 2H3 2I7 1H9 5B2 6B1 5A6 4C9 5C8 6E2 4F8 5H1 5G3 4E3 5E7 4H7 6I8 6G4 6H5 5I9 7F2 8E5 7E8 8H2 8I4 9G5 7G7

333: 1C6 6C8 6G1 **a53 o367r5 p15r2** 6E9 1D9 4E7 5A7 9F7 9E5 **a49 a52 c8b dAc bIc4 c7r dCc fHc c9r p73r1 u418r3 v1489r3 w8I4 x4 cIc** 8E8 7D1 5D3 **t1I6Hc q1B q2G** 2D8 3D7 1B7 2G7 3I5 2C5 3B1 3H8 1G4 2E4 3A4 2A3 2F1 1E2 3F3 2H2 1I3 5E1 5F2 4I2 6B2 6A5 5I4 4H9 5C9 4G6 6H3 8C1 7B5 9C4 4B4 4C3 8B3 9G3 7H4 8G5 9H6 7A6 9A9 8F6 7F9 7I8 8I9

334: 1F9 5A5 4H9 5C9 7B3 8I8 1E8 9E6 9D1 5E1 **a26 a34 a42 a74 d8r pICc1** 4B8 6D8 **dAc eHAc3 x2 cBc x7** 2D6 **dIc s1Cr** 1A3 2G3 2I4 4C3 5F3 6H3 **a41 a44 b2r7 t1I8Hc uHDIc7** 1G5 7H5 9F5 4D5 **oABFc2 v2689r7 q1D** 5D4 6F7 4F6 4G4 4I1 6G6 5I7 5G2 7E4 3F4 1D2 3B2 1C1 3E7 3H1 1H7 1I6 6B1 6A2 6C4 9C2 8A4 9A8 2C8 2B7 2A9 8C7 9B9 8F2 7D7 8G1 7I2 8H6 9G7

335: 5F4 7A8 7C3 6H2 5E6 6B6 **a91 bIc4 d1r a21 bIc1** 5D1 3F1 7F6 **cCc** 1C1 9B1 6A1 **gGc a37 pEGc3 s7Dr a82 dDc uIAEc3** 4G6 **a63** 2A3 **uGCFc9 t8I7BR** 7G7 **oCFGc9 x5** 7B4 4A4 4B7 8I4 **dHc v2569r5 q3A** 1B9 3I9 2I7 1H5 9G5 6I5 5C5 6C9 4D9 4E2 6F3 3E3 2D5 3D6 1F8 1G3 2H6 3H4 2C4 3G8 4I3 4H1 5G9 7D2 7E5 9D8 8F9 9F7 8A7 3C7 3B2 3A5 9C2 8B5 7I1 8G2 7H9

336: 5E2 4D9 7C2 4B2 6G2 9E9 9F6 9D8 4G1 **a57 cEc fCc** 3A6 1E6 3E7 1G7 7I7 9C7 7G6 7H9 6I9 3G9 1C9 3C1 **a18 oBDHc5 c3r r28 x3 q1H q2G q3I p84r5 w5C5 a45 x3** 6F7 5A7 **a53 x3 x3** 1B3 **b9r3 v2689r3 t7A6CC x4** 3B4 2E4 3F3 1F8 1D1 3D5 2G3 1H5 3I8 6A4 5C8 2A8 2C5 4A5 6C3 4C6 5F1 5D3 4I3 5I6 5G5 6H8 7A3 8C4 9B5 8E3 7D4 9H3 9G4 8I5 8G8

337: 7C5 **b8r7 cCc** 5B5 1E5 **b5r9 cHc e83r8 g2r** 1B9 **a36 c3b** 2I4 3I5 **f1r p17r1 uHBFc1 x1** 6G1 4G5 6F5 6I9 4C9 6C4 9G9 **cDc c4r h24 r68 t8D5Ec u726r3 o149r3 c7r e71r1 x6 q8G** 8F1 **q9C** 7A1 2B1 1A3 1I1 2H3 6B3 4A6 4F3 6D6 7D3 9H1 9I3 7I7 8G8 1H8 2D8 3B8 3A4 1C7 2C2 3F7 1D2 2F9 2E6 3G2 1G6 5F2 5D9 5E7 4D4 4H2 5H4 9A7 9C8 9E2 8E4 9B4 8B6 9F6 8D7 7H6

338: 3I3 6H8 3G8 2G5 7G2 8G7 5G4 7I4 **a66 c8r e91r1** 5E1 **o159r3 c2r f1b a17 p86r1 p25r9 u538r6 v1259r9** 4G6 7H6 6A6 **e86r1 s4Ar t6C3Bc x9** 4I5 **d4r q4A** 2A3 1C1 2H1 3H4 2E4 1G9 6D4 6F5 4D2 2F2 3E9 2C9 3D6 5F6 5D9 4E3 5C3 6E7 4B7 3C7 3B2 3A5 6C2 6I1 4A1 6B9 4H9 8B1 7B3 7A9 8D5 7C5 8C8 9C6 8E6 7F7 1D7 1F3 9D3 7E8 9F9 9G1 8I9

339: 3H2 5C6 5A1 4D7 4E4 7A2 1C2 7H1 8A7 3B7 **a33 a86 bIc9 cIc** 3I9 1B9 4C9 7G9 **a45 a98 c6r** 6G6 8H6 **f5r x5** 7E6 3D6 **pBDc4 r18 uDBHc5 v2368r5 x4** 5I4 5G7 7I7 9F7 9D2 7F3 **dFc eDBc4 q3A** 2C1 3G1 3A3 4A8 **o159r8 q5F** 6E5 3F5 2D4 3C4 2B8 1D3 1F1 3E8 2G3 2I5 1G8 6D1 5F8 6F2 5B2 4B5 6B3 5D9 4H3 5H5 6I8 6H9 7B4 7C8 9C5 8F4 7D5 9G4 8G5 9H8

340: 9G2 6H2 4C2 8G6 **a29 a56 a87 bIc1 bIc5 c5r pCHc9 t9D6Fc** 5F6 6A6 6C4

302

9B6 5G3 5B1 3G7 6I7 7H7 9F7 3H4 **b6r8 cHc fDc g1b** a15 o349r9 uFCIc3 7D1 8I1 **c7r cFc o348r3 v3479r8 x8** 3B9 **q9A** 3A3 2C8 1C5 1F3 3D8 1E9 2E7 1A7 2A1 2B4 1D4 2D6 1H1 2I3 2H5 1I6 4B7 4A8 5C9 5H8 4I9 7C3 8A4 7B8 8B5 9A9 8E3 4D3 6F5 6E8 4E1 6G1 4G5 9D5 8F8 7F9 7I5 9I8 8H9

341: 6F1 6E6 5D7 **a58 f1r** 1A1 **d2b a29 gHc a33 p34r5 pGCc9 pGFc9 u915r2 x5 x9** 4D9 4E8 5F3 2E3 3E9 1F2 1I3 8E2 7E4 **f9r** 9H3 **pHAc4 s4Ir** 5A2 9B2 9A7 **c4r e95r4** 1B4 **u826r9** 7F9 7B6 **pFGc5 pFGc6 a36 v3467r5 f2r x8 q9G bIc8 q9G** 8I6 **a99 s5Ir a69** 8C9 8D5 2F5 1D6 2G6 9F6 9D8 **eGCc8 q7A** 4A3 4B5 1C5 3I5 3H2 2H7 3B7 2I1 1G8 4H1 4I2 6H5 5I4 6A4 6B9 2A9 2B8 5C8 6I8 5G9 8B3 9C4 7A5 8A8 8H4 9G5 7H8 9I9

342: 2C6 1F7 6G7 4C7 8A7 9B9 7D7 8G5 2E5 **a14 a71 pDHc6** 7I6 9D6 **p75r8 u169r8 a38 o357r8 c8r c8b cEc r18 uAEHc3 q8C** 7B1 **x2 x3** 5B3 **cAc x2 t2F3GR** 9G1 **e91r3 fHc q1I c2r cGc pGDc9 a59 r18 uIBEc4 x2** 6B4 **e84r4 cIc** 4D9 4B2 3C2 1C1 1B5 3H1 2I2 1E2 3D3 2A3 3A4 3F8 2F9 1H3 2G4 1I8 3G9 5C5 6A8 5D8 6F2 5F6 4E4 6E1 4I1 5G2 5H4 4H5 6H6 5I9 9A2 7C8 8C3 8D2 9E3 7F4 8E8 7G3 8I4 9H8

343: 3G8 7G6 8F6 **a57 a92 d9r** 7B7 **fHc o159r4 o159r5 c7r s4Cr t7I1HC a37 fDc p71r1 uEBDc8 x3 c6r u169r1 v1679r1 q4C** 7C1 8B8 7F8 1C5 2I5 5B5 9H5 8I3 9B3 9G1 7I4 1H4 5G4 6G2 5C2 4C8 4A3 3C3 6B1 5H3 6E3 2F3 4E7 4H1 3I1 2A1 3A4 1F1 2E4 1D7 2D8 3D9 1B9 3E2 2B2 3B6 2H6 3H7 5E8 5D1 5F9 6I7 8E1 8D2 9D4 7E5 8A5 7A9 9F7 7H2 8H9

344: 2E5 2D7 1I6 4H3 2I3 5G7 7C7 9D3 7A3 1C3 9E7 **a34 a65 t2H7Gc** 3H4 **c3r cGc p28r9 uADGc4 x2 s5Ir x2 x4 x4 x8 q4D pECc8 v1249r8** 5E8 5C9 3C5 **cIc e62r1** 8F1 **a89 o489r4** 5I4 6H1 3G1 2B1 2H9 1F9 3A9 1E4 5A1 6I5 4G8 3I8 2F8 3D2 2G2 6C8 6F2 4D4 6B4 9A8 1B8 1A2 4B2 4A5 8C2 8A4 8B5 7B6 7E2 7F4 9F6 8D8 8E9 7I1 9I2 9G4 9H5 8H6 7G9

345: 3E1 6C6 5E2 6E7 4I6 9A1 9F4 9I7 2H6 8B6 7H1 **d1b** 1B5 **eIAc2 fAc a75 fGc t1H3DR dIc pIAc9 a49 cAc p58r3 q4G u913r9 oBDHc9 v2568r3 x3 q3B x8** 2C8 2A3 3B9 3F8 1F7 1E6 1D9 3D3 1H3 3G7 1G4 3C4 1A2 3H2 1I8 5C3 6A8 4E8 5F5 4A5 5A9 6I3 5G8 5I1 2G1 2I9 4G9 8A4 7C9 9C2 8C5 7D2 9E5 7E3 9B3 7B8 7F6 9D8 8I2 8G3 7G5 9H9

346: 1B5 1I1 4I7 5B7 9A7 **b4r1 cGc** 9G6 **p84r5 a65 f4r h15** 7G1 4H1 4G5 8H5 **d7r u537r2 p69r2 uDAGc2 u148r4** 2F4 2B8 **b4r8** 5F1 6C1 5C8 1C4 6F5 7E5 7F7 3E7 **pFHc9 u167r6 a26 x9 x9** 2I9 8I8 6H8 5H4 **b8r9 eIEc2 eHBc2 r58 a23** 1A9 4B9 8C9 3C6 **oBHIc3 t6E8Dc q4E** 5D2 6I2 5G3 3H3 2A3 3B2 2G2 6B3 6A6 4A4 6E4 8A2 7B6 9E2 8D4 8E6 1D6 1E3 4D3 4E8 9F8 3D8 3F9 7D9 7H2 9I3 9H9

347: 6A5 8F1 8D5 8H4 **a28 a82 a99 c7r** 7E2 7G5 1H5 9C5 9B1 **p43r4 u617r8 x7** 5F3 2F4 4D2 **cEc cAc e61r3 f3r** 2I2 **h36** 4C1 5G1 3I1 3G4 **bIc9 o167r8 u167r7 c2r x7 b1r7** 3A2 **cCc v1679r7 dBc x6 c4r q5H** 5E6 4A6 6B3 3C3 2B6 1A9 1B7 2D3 1I3 3H6 2H7 1G8 2G9 5C7 5B2 6F7 5D8 3E8 3D7 4E9 6E4 4H3 4I4 6G6 6I8 5H9 8C2 7A3 7C6 9A7 8A8 8B9 8E7 7F8 7I7 9H8 9I9

348: 1B5 3F6 9C5 7G2 8F2 8E3 3E8 1G8 4G6 6C8 5F8 **a17 a23 c4r eGEc1** 6B1 **g7r p19r9 a79 c9r** 9H8 7B8 8B6 **u146r3 x4** 3I1 2E1 4D1 5G1 7H1 7I6 1H6 4H5 2G7 **o146r3 x4 t5E7Dc v1479r4 x7** 5E5 7D5 **q5H pDBc4 c3r q1E** 1I3 2H4 5H3 4A3 6F3 6D9 1E9 2B9 3B3 1A4 2D3 3D4 4F4 5D7 6I7 8C4 5B4 5C2 3A2 3C7 9B2 7A7 9A9 9E7 7E4 7F9 9I4 8H7

349: 6A2 5A1 **a11 cIc** 4I1 6F1 **a58 cFc d4r** 4E9 **eIAc9 g3b o367r3 p28r5 s2Dr t3F2IR uADHc5 x4** 5B7 **x4 dGc a95 b8r5 c9r v1256r4** 8E3 3D3 1D1 3B1 1A9 1I3 3G9 9A3 9I9 8A5 8C1 9G1 8G4 9D4 5E4 3F4 2D8 2I4 1B4 2C5 1G5 3H8 6C4 4B5 4C6 6B9 6E8

4D7 4H4 4G2 1H2 2E2 2G7 6H7 6G3 5I8 7C9 9C7 9F2 7D5 7F7 1E7 1F6 9E6 7B6 9B8 8F8 7H3 9H5 7G8

350: 3H6 2H8 5G7 6H9 9E6 9H4 7G8 **a54 a58 a61 a63 c5b** 6D6 5C6 4I6 **d5r f8r fBc gFc h48** 1B8 2A4 1D4 5B4 5A8 4F4 4D8 8F8 8D7 2F7 **p52r2 p47r5 s2Er a21 uBFGc9 a79 x2 q1E x5** 5H3 **d7r bIc5 oAEIc5 t3B1Ir uBAFc2** 6C1 **p19r1 eIAc1** 9G9 2I9 **b2r2 c8r e43r2 q8A** 7C2 3B2 1A1 3C5 1C9 1E5 3F9 3G1 1I2 6A2 6B3 4B5 5E2 2D2 2E1 6F5 4H1 4G2 5I5 8B1 8A5 9A3 7B9 7D1 9F2 7F3 8E9 9I1 8I3 7H5

351: 2F7 2H6 4D8 7F9 9B9 2D9 3D2 3E5 2I5 8D5 9A5 7D6 6F4 9E4 **a18 a32 d1r d4r d6r s7Br t6I8HC c3b u714r3 o368r3 c7b mBc bIc4 pHCc1 q6C v1378r1 x8 q2A q4C** 5A2 2B2 3B4 1B8 2A1 3I1 1E1 3F3 1G3 2G4 3H8 6H3 4A3 5I4 4C4 5C1 6C8 5B6 4B7 6B5 6E6 5E7 4E9 4G1 4H5 6I7 5G8 5H9 1I9 1H2 7B1 9C2 8B3 8A4 8C6 7A8 8F1 7E3 9H1 7I2 8H7 8I8

352: 2A7 1E7 2F8 6D7 8D3 9G1 2I1 3B1 2H3 4C1 4A8 6E1 8C8 8H7 5I5 6I3 7I8 **a96 cEc c7r p74r9 p53r9 pEBc9 a79 r08 u347r9 v3457r9 x2 x2 x4 cDc e74r9 l45 d8r q7H a66 s1Gr fGc t4B5Fr dBc** 8G2 8I6 1G6 7H9 5G9 1I9 2C9 3D9 2E2 4F9 5F3 4B3 5A6 6F6 5D2 6B2 5C4 2B4 3A5 1C2 3H2 1H4 2G5 3G8 6G4 4H6 6H8 9A2 9C3 8A4 7B5 9B6 8B9 7F2 7D4 4E4 4D5 8E5 9E9

353: 1B2 1C3 5F2 7A2 7B6 8E3 6E6 3D6 2H6 5G6 5H5 7E5 1D5 3G5 1G8 **a94 c3r f9r t6F2Ec bIc1 uADHc4 x4** 1I4 **cFc r18** 6I3 **o168r9 p24r9 a69 x1 cEc c4r a44 r18 c5r** 5I7 3H7 3I2 4B7 4H2 **q7G v2457r1 x4** 2B4 3C8 3E4 2F8 4A4 5D4 4E8 9C4 8A9 5C9 6B1 6A5 5E1 1F1 2E9 2I1 1H9 6F9 4G1 4I9 7C1 9B5 9A3 5B3 5A8 8B8 7F4 9F7 9D8 8D1 9H1 8H4 7G7 9G9

354: 6D1 3G7 3I9 2I1 **a38** 5E8 5D7 1E7 **a23 a93 b5r3** 9C3 8I3 8B8 3C8 2F8 8A1 3B1 **a15 c7b p36r4 q7G a35 cHc uFAGc9 a59 f9r h79** 9H7 7A7 9A9 7H4 **dIc d5r o369r4 r08 c4r s4Fr** 4E3 6G3 **v2358r5 x2** 6A2 5B4 3A4 2A5 1D4 2D3 3F5 5A3 1B3 2B2 1A6 1H2 2H6 4D2 6E5 4C5 6C6 6F4 4F6 5F9 5I2 4I4 5H5 4G9 7C2 9B6 9F2 9E4 8D5 7D9 9I5 1G5 1I8 7I6 7G8 8H9

355: 1B9 1F6 3F3 3D9 1I5 5A6 7C9 7I6 2H6 9H7 6H5 **a24 a47 p92r3** 1G3 3G7 3I4 **pCIc1 p84r5 pGFc8 u413r8 x8 cHc** 4E9 **a55 f5r h39** 8H9 5I9 5H3 9I3 **a92 a98 u934r8 v1349r8** 1E8 1A7 **d8b a81 o347r1 t3A7BC s8Ar** 9E4 2D4 2E7 8E5 8F1 5E1 4B1 6I1 3H1 2C1 2I8 3A8 7A1 7B8 9D8 5F8 6F4 5D7 6B7 4D5 5C5 5B2 2A2 2B3 4A4 6G2 5G4 4H8 9C2 8A3 8B4 9A5 7D2 7F7 8I2 8G8

356: 2B6 2G3 1G5 3I6 5B3 6G2 8F3 6D3 7I1 2D7 **a82 cHc** 6H6 **cBc f4r p62r8 s5Fr uAEHc5 uDCHc5 x5** 4C5 5E5 8H5 9H7 5A7 6F7 5I8 **pIEc4 r08 x4 c3r t6E3DC x9 d1r x9 t9G7FR bIc9 e74r4 e81r4 oCEIc9** 8G8 **eECc8 q2A** 3A8 2A9 2E8 1F1 2C1 3C4 3F2 1E4 3D9 2H4 1I9 4E1 4F6 4D8 6C8 4B9 5F4 6E9 4G4 5H9 9A1 7A5 7B8 8C9 8B7 1C7 1B2 9C2 8E2 7D4 9D5 9E6 7F9 8I4 7G6 9G9

357: 2I7 6F5 9E3 2F3 7D7 9B7 **a19 dGc d1b f3r p86r4 s3Hr x1 x4 a44 cCc** 2C5 **d6r t9C7Fr** 8D4 **cDc uFBHc8 v1268r8 cIc** 1H3 **o125r1 q4H** 4C7 5C8 4E9 7F9 9C9 1A9 1C4 7C2 8E2 9G2 **h59** 8G9 3I9 3G5 9I5 8A5 7B8 2A8 3B1 1G1 2E1 5A1 6A3 6B4 4D3 6D1 4H1 5I3 4I4 5F4 5D2 3F2 1E8 3D6 1I6 3H8 5E6 6E7 4F8 5G7 6G8 7A4 9A6 7H6 8I8

358: 1C8 2I8 3E8 1I5 4D8 5H2 4G7 6H4 2G4 3F4 4B4 8C4 7D4 9H7 **o347r6 b8r6 d6r pCFc1 pGEc3 x1 q7B t8I7Er eGEc3 q1G** 3H9 **b3r3 cBc u746r1** 8I2 9A2 7E2 1D2 1F7 5D7 6C7 6F6 8D6 **a75 a81 c5r s4Ar c4b v2467r1 x9** 1B9 2A1 2D9 2F5 1E3 1G1 2H3 5C1 4A6 3B6 3A3 6A9 5B5 6E5 4E1 5F9 6I1 5G6 4I9 8B1 7B3 8A5 9C6 9F1 8F3 9D5 9E9 7H1 9G3 7I6

359: 1F9 3G6 2G1 3I4 7C9 7H6 9A6 6C6 4E6 8I7 4I9 2H9 6B9 **a27 a62 b7r8 dEc bIc2**

p92r5 a15 q7A 6A7 2B7 2A5 1D7 6E2 5H2 4H5 **uACHc3 v2349r3 cDc x4 t7A8Hr** 8B8 **a74 o459r4 pBDc2 a22 q9B e43r3 q9B cFc** 4G7 **q9B** 1C1 5A1 **p18r3** 7E3 4F3 2D3 3D2 1A2 3B3 3E5 3F1 2I2 1H3 1I8 5C3 5B5 4B4 6D4 5F8 5E7 5G4 6H8 9B2 8A3 7A4 8C5 8E1 8F2 9F4 9D5 7F7 7D8 9I3 8H4 9G8

360: 2F2 2D3 1F6 9A6 9E5 7E2 8A2 9H2 6G2 5B2 6B6 5I6 2G6 **a17 a18 a99 b5r7 bIc9 cCc** 8C3 **c3r** 3E9 1H9 **s5Fr u629r1 x1 x4** 9D9 8I9 **dFc t9I1GC eICc1 bIc1 c4b oCDGc8 pEAc4 u436r4 vACEIc4** 1G1 2C1 7B1 9C4 9I1 **bIc4 q4G** 4B3 1A3 3A8 2A5 3B4 1B7 1E4 3D7 2I4 3H5 1I8 5A4 6D4 5F8 5E7 5H3 4G8 6C8 4C7 4H4 6H1 4A1 6A9 4F9 6F5 4I5 6I7 8F7 7F4 8D8 7I3 8G4 7H8

361: 1A6 3F4 2I8 5D4 4A4 6A8 8G1 9I4 7C4 1G2 2B2 **a19 a97 c4r** 5B7 **c6b f8r o258r5 p34r1 c6r bIc9 s2Gr t5C7Bc a71 q7B j29 s4Fr x1 d2b a23 q9D** 9A1 **t4B2Cc e62r1 v3679r3 s7Dr** 5F6 4E8 6I6 5G5 1I5 2F5 1F3 1E9 6B5 6C3 4B1 2C1 2A9 3B3 3E1 2D7 2G3 5C9 6D1 4F9 6E2 4H2 4I3 4G7 3H7 3G6 5H8 6H9 8A3 8C5 9C2 7B9 7F1 8F2 7E5 9E7 9F8 8D9 7D6 9D3 7H3 8H6 8I7

362: a12 a55 a96 cCc 9C8 **dAc dIc a34 pCIc3 pCIc4 pADc7** 8E9 1D9 9B9 **a73 d9b a95 c4r oAGHc4 q6G** 1G5 **pGAc3 t4I3Gc t8F2Dc** 2F4 9F6 9E5 7I5 **u316r1 a11 d1b h12 fBc eIBc8** 2E6 3A6 **v2479r3 p83r3 a33** 3F7 5D7 4B7 5B6 6A8 2B8 1A3 2D3 1F1 1E2 3E8 2I1 1H8 4C3 5A4 6D6 5F2 6B2 3C2 3B1 5C1 4F5 6H1 6G3 3H3 3G4 4I4 5H5 4H6 5I8 5G9 7B3 7C4 8A7 8D1 7D2 8F3 9D4 7E7 9I3 8H4 7G6 7H9

363: 2A1 3C7 1F5 3G3 6I1 4H7 5E7 9F7 **a16** 6C6 6F3 5F9 6H9 **bIc2 bIc8 e85r5 dCc fBc gDc i28 c3r** 3D9 1I9 **s2Ir x4** 4D1 7E1 9C1 **p17r4 o389r4** 6E4 **uHCEc8 vCEFHc8 x8** 6G8 6B2 **c2r c7b x2** 2D2 1D7 3E8 3H2 2G7 2I8 1A8 3B4 2B6 1G4 3I6 4C8 4A4 4B9 5C5 5A3 4E2 5D8 5I2 4G5 9A2 8C3 7C4 7B5 9B8 7A9 8A6 8F2 9D6 8D4 7F8 7G2 9I4 8I5 7H6 8H8

364: 2C8 1D1 1I8 5H5 4I3 6I6 3H6 2B6 9A3 8C5 7F6 5D6 4C6 8H3 7G8 9D8 6E8 4G1 8E1 3B5 **a67 a69 d5r pGDc4 x4** 1A4 **q2G x9 cEc c3r c2b eGDc4 s8Dr c8r u628r2 a42 u918r7 v2368r2 a72 q2A o189r7** 5B1 9C1 7H1 **bIc9 e74r7 h79** 5C9 4A7 6A5 6C2 2A2 1B9 3C7 1F7 3D2 1H2 3I9 2E9 2F3 2D5 3E4 2G4 5E3 5F4 4F5 4E2 6D7 5G7 6G9 9B7 7B2 7A9 9F2 8D4 7E7 8F9 8G2 9I4 8I7 9H9

365: 5D9 6B9 5G6 6E6 2D6 7A6 8F1 9B1 7I9 4H9 4I1 2H1 4G2 8I2 3H2 1H3 **a98 e43r3** 8B3 1B5 3G5 **bIc5 c5r o157r8 fEc b7r4 q1F pIAc4 r18** 9C5 8D5 **b9r7 t4E2Fc v2368r7 cCc q1G x4 c1b d2r x7** 2C7 3A3 2F3 2E5 5C3 6C2 4E3 6F5 4A5 **h28** 7E2 5F2 5E8 9D8 1F8 2A8 1C4 3E7 3D4 2I4 1G7 3I8 5H4 6A4 5B7 6I7 7B4 8A7 7C8 8E4 7F7 9G4 9H7 8G8

366: 1B6 8I6 6G6 4D6 4E4 1D4 4H8 9H2 6I2 6D8 9D5 **a83 d8r eIAc1 pBFc1 q1H s8Hr x7 cHc** 3H4 2B4 7G4 7B9 **p39r9 u147r5 x7 q6B q7I q9B q9B t3I1CR** 1E8 **fCc h28 d3r a27 o147r5 x7 s6Er x9 t3E5Fc eFBc1 q5F** 2F7 3E2 2A2 3C8 1F9 2E5 3I5 1C5 3A1 3B7 1H1 2G8 2I3 3G9 5F2 4F5 6B5 5C1 4C3 4A7 6F1 5D9 9B1 8C2 7A5 7C7 8A8 8E1 8D7 9E9 9F3 7I1 7H3 5G3 6E3 5E7 6H7 9G7 8H9

367: 2C4 2E2 1E7 2F8 6C2 8B2 9D3 8E8 7F9 9G2 3I2 8G4 9A4 2I3 2H7 2D9 6H9 **a81 c1r** 1G9 3B9 **o159r1 p16r6 p86r7 uBEHc6 v1368r6 b4r6 cBc h13 q7B b7r5 t5B7Ac x5 x6** 5E6 9E5 8A5 8I7 **p16r5 cIc eIFc5 q5H** 5C8 3A8 3C7 4C5 4B6 6F5 3D5 1F6 1I5 3G6 4D1 5H1 6A1 4A7 5B3 1C3 1B1 4G3 5G5 6I6 6G7 4I8 9C1 7A3 7C6 7B7 8F1 8D6 7I1 7H5 9H6 7G8

368: 1E4 6D9 4I2 7B2 9E2 2D2 8C9 9H9 **a67 a96** 1A6 **p62r1** 1C1 **c3b** 5G7 5B4 8A4 **cHc p18r7** 7A7 **r18** 8B8 7F8 **a18 bIc3 s2Er uDFHc3 s7Dr v1269r3 x3** 3D6 2G6 7I6 **c2r** 2F9 3A9 2A8 **s5Dr x5** 4C8 5E8 5F6 8E6 **a85 e75r3 oAEGc5 q5C** 5D1 6E3 3F3 2E7 1B7 2B3 1I3 3H7 5C3 4E5 6A5 4A1 4F7 6I1 2H1 2I5 6G4 3I4 3G8 5H5 9A3 7C5 8F1 7D3

8D5 8H3 9G5 8I7 9I8

369: 3D7 3H4 2H8 3G3 2B3 5E3 8H2 7H3 7I7 4H7 6B7 1C7 3C2 9H9 5H6 **a15 a18 p24r2 p94r4 p58r9 q2I u825r5 u835r5 uECIc5 v2358r5 d6r** 7E9 **t6F9Dc e94r4 x5** 3A5 1A8 1B4 3B1 3E8 3I6 7B6 9G6 **c9r d8b x1 t2D8Fc** 8D6 **o178r1 x5** 2D5 1F1 1E6 2F2 2I1 1G2 5B5 6A9 4C4 6F4 4E5 4D1 6E2 4F6 6D8 5D9 4I2 6G5 7A4 8A1 7C5 9C8 8B9 9E1 9D4 8F5 7F8 7G1 9I5

370: 4C4 8B9 7B3 9B4 9A6 2I6 3C6 1I2 **a77 c8r p43r9 r58 gHc bIc8 u248r3 u348r3 a33 c2r** 2C9 **dHc x1 c1b dDc** 7D4 1F4 8G4 **a25 d6r b6r8 e61r9 oCDGc5 q9H c9b v1259r8** 7C7 8E7 8F3 9D5 6E5 3F5 1D9 3E1 1B1 3B7 3H9 3G3 5C5 2B5 1C8 1G5 1H7 2H8 4A1 5B8 6B2 6D1 4E8 5D3 2E3 2D2 5F2 4F9 5H1 4H3 5G6 6G9 6I8 9C1 8A8 7E2 9F8 8I1 9H2 8H5 7H6 9G7 7G8

371: 1D1 2F4 2I3 6A5 1C5 3E5 4E7 9E3 8C3 7D5 8F6 9F7 9I5 2A7 7B7 7A4 7C6 **d4b** 4A6 **a41 s8Ar x2 x8 cAc cGc pFGc8 uGEHc8 v4589r8 x2 q1E a12 q1E** 7E2 8D8 7H8 **a38 oCDGc2 pFHc2 q1H bIc2 q4H** 4B4 6B3 4H3 **pEHc9 r28** 2D9 3F2 1E8 2G2 3G8 3H1 4D2 5B2 1A2 5A1 4C8 6F8 6E9 6G1 6H2 6I4 1G4 5I8 5H7 1I7 3I6 1B6 3B9 1H9 4I9 9B1 9C2 9A8 8A9 8I2 9G9

372: 7D6 7F8 **a81 b6r4** 6I4 **cEc a29 fGc** 2G2 **o257r7 p35r8 a58 f4r t3F1Br p19r6 c8r h17 uIAFc1 s8Hr a96 c8r h46** 3G4 1H6 8H4 8G6 9A6 **a39 c3r c9r q1A d7b a75** 2B7 **g5r dCc q2E q5C** 5G1 **c7r p74r9** 5F9 **e51r2 x1** 2C1 1A5 3D1 2E5 2D8 1D9 3F3 1B3 3C2 3B6 1E2 1I1 3H8 2I9 5B2 4B4 5C5 4C6 4A7 6A8 6C9 6F2 4D3 5D4 5E8 6G3 6H5 5H7 4I8 4G9 8A1 8C3 7C7 9F1 9E3 8F7 8E9 7H1 7G5 9B5 7B9 9I7 9H9

373: 2E8 1I5 3G8 5C5 **a36 a67 a83 c2b f8r oAEHc6 d9r p93r9 x9 x9** 5A9 **gBc** 3C2 **a71** 4C4 **e93r9 q9B cGc q6A** 5G7 **a62** 6F8 **cEc h35** 6E5 8D5 8E3 6D4 **d5r s8Ir** 5H8 5I4 **t5F9EC u249r1** 1B4 **c1r q2D x9 t4E8Fc f8r oBDIc1 q8F** 8G1 4I1 6A1 2B1 2A3 3B6 2C9 1A7 1F1 1E6 2D7 3D9 2H6 2G4 1H9 5B3 4B2 5F2 4D3 5D6 4F7 4E9 6H3 6G2 7C1 9A6 8C7 9B9 8B8 9D1 9E2 7F6 8F9 8H2 7I3 7H4 8I6 9H7 9I8 7G9

374: 1D3 3C3 1E8 1F9 **a49 a69** 9D9 **a84 f8r o169r1 p27r1 s8Ir u914r7 v1469r7 a87 c7r fGc f3b a39 d1b cAc gGc** 6F8 9F7 **d6b j79 e85r1 cIc q4D** 5F6 8F4 2F2 **x6** 3B6 3A2 2C8 2D6 3E5 2G5 8A8 8C5 5A5 4D5 5D4 4C4 6C9 5B7 5C2 6E1 4E7 5I1 6G7 2H7 1C7 2B1 2A9 1G1 4G9 9C1 8B2 7C6 7A7 7B9 8D1 9E6 7E2 7H1 9G2 7G3 5H3 5G8 3H8 3I9 3G4 7I4 8G6 8I7 8H9

375: 6E2 4D4 6C4 7G1 9I2 8I4 3G4 1B4 4G7 **a78 c9r** 3A7 **c7r e43r1** 8F1 **a86 u269r9 d1r a35 o169r5 t1C8Bc v3478r6 x9** 7E9 8E6 7I6 4B6 3H6 2H5 9H8 4I5 **d2r p96r9 s5Ar t9A2Bc bIc3 eICc9** 5A1 3C1 2D1 4E1 2A6 4C3 **u519r3 a53 q5D** 9D5 9F7 5D7 1D6 **x9** 2B9 1A3 3B5 1C8 2E3 1F5 3E8 2G8 1I9 5C9 6A5 5F3 5E5 6F6 5G6 5I8 6G9 6H3 7B3 7C5 8C7 8B8 9A9 9G3 7H7 8H9

376: 6A8 5D8 4I5 9B6 9I8 2G8 8I1 4F7 **a21 a26 a43 a93 b4r9 d2b** 3D5 1G5 2B5 8C5 **cBc eGCc7 pGFc2 x2 q3F t5B9Cc x2 q6C a62 x2 c9r o259r4 dIc q3G** 2I4 5I7 **s8Dr t3C2HR fHc t7G8AR v2489r2 c5r x9 c4r a44 q7G** 7A3 4B3 4A9 3C9 2H9 3G7 1H2 2A2 1A7 1B1 3F2 1E3 2E7 3I3 1I6 6C1 4C4 5B2 5F1 2D1 2F6 4D2 6G2 5H4 6D4 6F3 5E9 6H6 6I9 9A1 9C2 8A4 7C7 8B9 8E2 8D3 9E4 7D6 7F9 9H3 7G4 8H7

377: 3B5 2B6 2C2 1G6 6C8 5A1 4A5 6H1 6G5 6I6 4D6 3E6 9F1 8C1 8D5 5F5 4B2 6D2 **bIc7 pFGc8 q8A u413r7 v1349r7 x4 dFc q3D** 1H3 **o267r3 b8r3 s4Hr t8I4Gc a69 q4C a67** 1F7 4F4 **q4G q9C c8r dGc eGFc8 x9** 1C9 3C4 2A7 1D4 3H7 2G8 3D8 2I4 6B9 4C3 5B7 6E7 5E8 5D9 6F3 2E3 2F9 5I3 5H4 4G7 4H9 7B3 9C7 8A9 9D3 7F8 7E9 8E2 7H2 8G3 7G4 8I7 8H8 9G9

378: 2H9 3A9 7F8 **a95 cAc c3r d1r** 9H5 **b1r3 b1r5 b1r7 fEc** 4E9 **a27 j37 pADc1**

s2Gr u814r2 a72 x1 cEc s8Dr a87 8H8 **bIc7 q4D t5A6Fr b4r2** 9I2 **fGc** 5G8 4C8 2B8 2C6 **d5r dDc eIDc6 m7b** 8G3 3I3 3F7 **fCc q9G o367r4 q6C** 5B9 8C9 8A2 6C2 5F2 5E3 2F3 1E1 3D4 2E5 2I1 1H4 1G2 3G5 2G7 5D5 6E6 4D7 6F1 5A1 4G1 4H2 6G4 5C4 6B7 1A7 1C3 1B5 5I6 5H7 9B1 7A3 7B4 7C5 8B6 9C7 8D1 9E4 7D6 8E7 9G6 7I7

379: 3C8 5E3 4I1 5I9 9F3 7I3 5A6 9B6 **a14** 3F4 **a68 a71 c1r** 1H3 2A3 1A1 2C9 2B4 4C4 4A9 **b4r5 c4r cIc c6b pFGc6** 3I6 8I7 **dGc e63r7 p37r2 r58** 9C1 **b9r2 f8r o258r5 s7Dr uEHIc2 a22 q4F** 2D1 8E1 8D9 1E9 1D8 4E8 4D5 **c8b v1458r2 x2** 1B2 3A7 3E2 2F7 2E6 2H2 2G5 1G7 6A2 5C5 4B7 4F2 6D6 6E7 5G2 6I5 8C2 7A5 7D2 9E5 7E4 8F6 9I2 9H4 6G4 6H8 8H5 7G6 8G8

380: 2G2 1I4 5H6 **c6r e86r4 pDBc6 t2B1FR** 2C8 **dIc x1 x3 u924r3 x3 d9r** 9G7 **x1 f5r a58 d5b a57** 6A6 1C6 1F5 3I5 2B5 5G5 4I8 5D8 **cBc c4b** 9A2 **x9 bIc9 s7Gr c8r** 7A8 **oBEGc1 v5679r9** 8F1 6F7 7E7 3D7 1A7 3B9 3C2 1H9 4B2 4C7 4A5 5C9 5F2 4D9 4F3 8C5 9B4 6C4 5B1 6D1 1E1 3E8 2D3 2F6 2I1 3H3 1G8 5E4 9C1 7B6 8A9 9E3 8D4 9D6 7F9 7G1 8G3 6I3 6G9 8H8 9I9

381: 3A4 8A6 **a73 a13** 3H3 8I3 9C3 7C8 **a31 cCc** 2C2 5B2 **cDc** 5D8 **c5r e75r4 o357r5 dIc pCEc1 q7D** 9E4 5F4 7I4 8G5 5I5 **j57 fFc s1Fr a26 d1r x1 x7** 1G8 2E8 2F9 9H8 **d4r uHCEc7 v1568r7 x7** 1C7 3D7 3F5 1E1 7B7 8C1 7F1 7D5 3G1 **h13 q4A** 4F7 6D3 1F3 1D6 4A3 2B3 2A1 6B1 6A8 5A7 5H1 6H7 4I8 4H9 6E9 4E5 6C5 4C4 4G2 6G4 6I6 2G6 2I7 9F6 8E7 8D9 9D2 8H2 9G7

382: 3E2 1I3 3H4 4G5 5H8 7B4 9G2 6H2 5E4 6G7 **a39 a61 a66 p76r3** 4E7 **a53 pHEc6 u437r1 dCc** 7C3 8C8 4B8 4A3 2B3 **a17** 3D9 **a75 b7r9 cGc o347r1 gFc** 5D5 **dDc s2Fr a25 s5Ar d5r q5B t1C9Ac v1569r6 cFc q5A** 1C5 9A5 **x6** 3B6 3C7 2A1 1A9 1F6 1D4 2D8 2F7 2E5 3G1 2H6 1G8 2G9 4C1 5C2 5A6 5B7 6C9 6D1 4F2 6E3 5F9 5I1 6I6 9C6 8B9 7F1 8D3 9F4 8F5 8E6 9D7 7E9 8H1 7G6 8I7 9I9

383: 5I3 **a22 a44 f1r** 1E8 4D8 **f6r fFc** 1B4 **b1r5 fGc oAFHc2 t7C4Bc** 6A2 4G2 **a47 d9r** 9E7 4F7 **uIAEc1 uIBEc9 x1** 1H1 1G9 **eGDc1 x9 x9** 6H9 **c5b dDc b9r5** 8H2 7F2 7H8 3G8 7G4 **bIc5 p47r9 a79 q4E v2367r5** 1A5 3B3 1F3 6E3 6F6 7A3 8A1 8B7 3C7 2B2 1C6 3D2 2H7 3H5 5A7 9C2 7C5 4B5 5C9 6C4 5F4 6D5 2E5 3E6 2D4 3I4 2I6 4E9 5D1 4I1 5G5 9B6 7B9 7E1 8E4 8F5 9D9 9G1 9I5 8I9

384: 1A3 4F5 5G3 7E3 9I3 4A1 **a35 a71 bIc5 d1b** 1B1 **dBc f8r fHc h15** 8C1 7A5 6C5 7H1 8H5 **a74 c4b p67r8 u259r7 x2 d3r** 3G5 2B5 **d2r a26 b8r6 o259r7 t8I2Gc q1H q1D v1579r6** 6H2 4E2 **a54 q6I x9** 1C9 3A6 2A4 2E6 3E9 1D4 3I4 1H6 2G9 5B6 6A9 5E4 4G4 6I6 4I8 5C8 3B8 2C7 3C2 2F2 3D7 3F1 4B7 5D1 6D8 5F9 5H7 9B9 8D2 9F7 7F6 9C6 7C4 8E8 7D9 9G2 9H4 8G6 7I7 7G8 8I9

385: 3B8 2D3 1F1 2A1 6I8 5H1 6C1 8E8 7H8 **a66 a69 c2r dBc a74 bIc2 eEBc7** 7G7 7F5 **oBEGc2 pDAc6 q3F t2E6DC uHAFc9 x4** 3C7 **s4Cr t1E3Ir c3b uIFHc4 v1256r4 a44 cEc cCc e63r6 q3A** 3F4 2G4 3I2 1E2 2B2 6E4 4F7 6B7 8A7 7D2 8C2 4A2 6A5 5C6 3A6 1A9 1B3 1C4 2E6 3D9 2I9 4C3 5B4 6D6 5E9 5G3 6G9 9A3 7A4 9B5 9D1 9E7 8F9 7I1 9G2 8I3 8H5 1I5 1H6 4G5 4I6 4H4 9I4 9H9

386: 6A9 6C8 5C4 6H4 4G7 3H7 7C7 5E9 **a45 a65 b9r6 cCc** 3C1 1G1 **cBc** 8B9 **cAc h56** 9C6 4B6 4C5 7B5 9B1 9H5 **cDc** 8D4 7A4 8A8 **d8b b7r2 p82r6 r18 s2Hr u258r2 o349r2 c7r bIc3 v1268r3 x3** 1H3 1B8 3B4 **h28 t2D3Gr x3** 2C3 3A2 3E3 2H2 3G8 2D8 2G9 4D3 5F2 5D1 6F5 3D5 3F9 2F6 1F4 2I4 1I5 3I6 4I2 6G3 5G5 8C2 9A3 7F1 9D2 8F3 7E6 7D9 7G2 7I3 8G6 7H8

387: 2C2 5A2 5E6 7B4 7D5 5F5 7H2 9E2 8D9 8F4 8G6 7C6 3B6 7A1 4E4 1D4 **c1r x7 b8r7 x7 t1H2Br a11 c1b h15** 1G5 3C5 1C1 **o136r9 s8Cr a78** 8H3 **p63r3 x7 cHc x8 x8 u529r8 v4678r8 a28 f3r a33 b4r3 d5r** 2G1 3F1 1H7 3E7 2B7 3A9 2D3 2F8 1E9 3I3

2I9 6E3 5D8 5G3 5H4 3G4 3H8 4I8 6A8 5C7 5B9 4B1 4C3 5I1 6G7 6H9 9B3 8A7 8C8 9C9 9F7 7E8 7I7 9G8

388: 1B4 2I3 1H9 6A5 6C8 5C4 4B9 4E8 1D8 6E4 4G4 9A4 9H8 8D9 9D5 3F3 **a16 a32 a46 i36 dHc pBFc1 pBFc2 s9Fr uGBDc6 t8A7GR c7r x1 gEc o567r6 q3C** 3A8 2G8 **q2F** 1E6 **a22 v3567r1 q5G** 4H7 5G6 6B6 5B3 4F6 5E5 2F5 1F2 3E1 2E9 3C9 1I1 3G2 1G7 6D1 5H1 6H3 4I5 9F1 8A1 2B1 2C2 2A6 9B2 9C6 7D6 7G1 8G5 8H6 7H2 8E2 7E3 8C3 7C7 9E7 8I7

389: 2C3 3A5 1C7 4E3 5G5 4G6 8I3 7I5 8E5 7H7 8F7 9G9 2H8 8B2 **a34 a61 bIc2 bIc4 c4r e93r8 p42r2 p35r9** 6A9 3B9 **o369r6 d5r s5Cr t2B7Ac a16 cDc t7D9Cr u217r2 v1247r2 x4** 3I4 1G2 3G1 9I2 7E2 **a21 q1D fEc** 9F4 **q7A** 3E8 1A8 3F6 2D2 3C2 2E4 1E1 1D9 4A2 5C4 4D4 5D6 6C6 4B1 2A1 2B6 5B7 6E7 5E9 6I1 5F1 6F2 5H2 6H4 4I7 7C1 8A4 7A6 9C8 9E6 7D8 7G4 8G8

390: 3F3 5A7 2B7 5G3 8A3 8C5 9B8 9D3 8F7 7H7 3C8 5I1 **a12 a76 a79 a82** 5F2 5D8 2F8 **b3r5** 9G5 9E1 **cGc d3b pGEc6 q8E b4r4 u439r6 u258r9 v3479r6 f6r q4F q5E q9F t2D1Ar** 2A5 1E5 **e61r6 o258r9 q1A** 7A6 7B9 6B2 **x4** 2E4 1D6 3B6 1A1 2C9 1C2 2D1 1F9 3H1 2I2 1H4 3I5 2G6 4B1 5C4 6C6 6D4 4F6 5E9 4I4 6H5 6I9 4A9 6A8 4H8 4G2 9F4 8E6 8D9 7D2 8G1 8H2 7G4 9I6 8I8

391: 3E6 1C6 4C3 9B1 8A6 8F1 9G6 **a78 a93** 6E3 5E1 6G1 3I1 4E8 5I8 7E2 **a72 fFc o267r5 c8r dIc pGDc7 q7G uCAGc9 x7** 1F7 2G7 **a22 a39 p14r2 pGCc9 a79 t5G4Br q1B v1489r2 c3r q1B** 7B8 **u439r4** 6H7 4D7 **t1I4Hc q4B t6A1Bc a44 q6F** 6A4 4B2 5A9 2B9 3C5 1B4 3H4 2I5 3G3 1H2 1I9 6B5 5C7 5D5 5F4 6F2 5G2 4I4 4H9 7A7 9D4 7C4 8C9 9C2 9F3 2D3 3D2 2A2 3A8 2F8 7F5 8D8 8I2 7I3 8H5 9H8 7G9

392: 6C6 7B3 8A7 1B7 9G6 8E6 1D6 9E3 5D3 8H3 3G3 7I7 4H7 9I4 7C4 9C2 2B2 1I2 **a14 a45 a48 a89 bIc1 bIc9 p95r5 q6I b7r1 dFc eHFc5 q9H cGc x1 x8 cCc h58 c1r cAc** 3A4 **l58 t1E7Dc c7r u256r9 v1459r1** 3H8 **a68 cDc o256r9 q4B** 4G9 2I9 3D9 1A9 3C1 1G1 5H1 4B1 6B4 5B9 4E4 2F4 2E1 4D2 6E9 5F5 6F7 3E7 3F2 5E8 2D8 1C8 2A5 1E5 4C5 4A8 6G5 6I8 9A1 8C9 7F1 7E2 7D5 8F8 9F9 8I1 9H5 7G8

393: 1A2 5A7 6F2 4D8 5I2 5H8 9A8 9E2 9I7 1G7 2F7 3C6 4G3 6C3 **a29 a49 b5r1 f1r p57r6 b9r6 e86r6 s6Hr q5G x5 cFc h69** 9F6 1D6 1F9 8D9 **bIc9 c6r s3Hr a35 c3r uEAFc5 a25 v1248r5 t9B7Er a81 o348r1 q1E** 1B1 2A5 1E5 3I1 2D1 2E3 3E8 1I3 1H4 2I8 5C1 4B5 4A4 6A9 5B6 4F1 6D5 6H1 5G5 3H5 3G9 6I6 4I9 7A1 9C5 8A6 7C9 8E1 9D3 7B3 9B4 7E4 8F5 8I4 7G6 9H9

394: 3E5 6A5 5H3 7H5 **a23 a83 a89 d1r cGc** 5G4 **a69 dIc a68 b8r2 c8r** 8H7 **cHc a34 p63r1** 1G1 3H9 1B9 4I9 8I1 8G9 **pFAc4 a14 a44 s9Er t9F3DC** 7F9 5E9 **cDc** 7I2 7C4 **pDCc2 dAc h23** 2A3 8B3 8A2 **a12 p74r7 s5Cr u259r6 x6 p73r6 o259r6 q4F** 4H8 6H1 **c4r dBc** 3C1 2C2 **e41r6 d3r r18 cEc q1E** 7E7 5D7 4A7 2B7 3B8 1A6 3A4 1D4 1E3 2F6 3F7 3D2 3G6 2I8 2H4 5C6 6E2 5B2 4B1 6B4 5F1 4F4 4E6 6D8 7B6 9C7 9F2 7D3 9E8 9I4 9H6 7G8

395: 3A7 9A3 5H8 **a97 b5r1 d6r a41 dFc pFAc4 q2B** 7F4 **a94 q2D** 1F6 6F2 **b6r6 gIc s3Dr t3H1Er** 2H5 **d2b** 5E4 5F1 4E3 2F3 2E7 3E8 3I3 3G6 5B3 6I6 6G1 2I1 8F7 5D6 **s7Ir** 9I4 **c1r r08 uBDHc2 u716r9 x2 cBc o167r9 fCc pDCc5 x2** 9G5 **e76r5 f7r h27** 7G7 4I7 4G2 8H2 1I2 3H9 1E9 4D9 6C9 6A8 2B8 3C2 1A4 2D2 3D4 2G4 1G8 4C5 4A1 4B6 6E5 7B2 8C4 9C1 7A5 8A6 7C8 8B9 8E1 9E2 8D5 7E6 7I9

396: 2F3 9A9 2B9 1G9 2G7 8B6 **a17 a36 bIc8 cFc a27** 5B7 4B8 5E8 1F8 6E9 5H9 5G6 4F6 **pFHc2 pAGc3 pBIc4 p92r8 x1 x2** 5C2 4E2 6H2 8F2 8D7 6F7 7I2 **a51 a55 c7r t7A6Cc t5I2HC e92r8 t5A6Dr uGCDc5 a95 s8Ar q6C c8r v1258r1 bIc1** 1A7 3E7 **a24 o348r4 q3A** 3H3 2I8 3A8 3C4 7B4 4A4 6C3 5A5 6B1 4D1 6D5 5I1 2H1 1C1 2C6 1E6

2E5 2D4 1I5 3I6 4G3 6I4 4H5 8A1 7A3 8C5 9C8 9E4 7E1 9D6 9G1 9I3 8G4 7G5 8H8

397: 3C3 4I1 6H3 4D3 9I3 7F3 8G7 9E7 5D7 6C7 2B7 5F4 6F1 6E2 **a56 a58 e91r4 fGc pEIc9 uFAIc6 uAEIc9 x2 x8** 3F8 **bIc8 oAFIc6 p34r9 v3457r9 c9r a82** 8H8 **c9b dHc a65 q3D** 1I8 **pIFc9** 1E9 8E5 **q2F q8D t1A5Bc** 2D1 2H5 **q2A** 6A5 5G5 6G8 2A8 3B9 1B5 1A1 2C4 3D5 2F6 1D2 2G2 1H4 3G6 2I9 5H6 4E6 5E8 4C8 4B2 5C9 5B1 4G9 8C1 7C2 9B4 8F2 7D6 8D4 9F9 8A9 9A6 9H2 7G4 8I6 7H9

398: 1I7 8A3 7B7 5A7 4B6 3A6 4D7 9C9 9A4 8B8 7I2 8E2 9G6 8D6 7D9 8H9 4G9 6E9 4F2 4H4 **dEc e63r3** 7G3 **p15r4 p76r5 p72r8 s2Hr oEGIc5 a55 uDAGc8 v2479r8 p36r8 a48 c4b h28** 1A2 3C8 6C2 6A8 **s5Dr t1G7Hc e72r8** 9F1 **x1 t1E6Dc q3F** 2E6 3F3 2I3 5E3 5F6 6H3 6F4 5C4 3B4 2B5 1C1 3D1 1D4 1E5 2F8 2H1 3H5 1G8 6B1 4E1 6D5 5D8 5I1 5G5 4I8 7F5 9E8 9I5 7H8

399: 4D1 5C1 3A1 1F1 6E8 7H1 8D2 8E6 2D6 9C8 8I8 **bIc3 pAEc4 q2F q2F u189r4 u589r4 v1589r4 fGc p19r5 uGEIc5 x5 x9 j48 a95** 7E7 3F7 9B7 **a74 a94 cHc** 2B8 3B3 **e82r9 o347r5 q1D q9F t6A7Bc q6C** 4B6 7A6 7C4 5B4 2A4 3C2 1B9 3E4 1D5 2F9 2E3 2H2 1G4 1H8 6B5 6A2 6F3 4E5 4I4 5H5 5G8 7B2 9F5 8F4 7D9 9D3 7G3 4H3 6H7 4C7 6C9 6G6 3H6 4G9 3I9 3G5 9H4 7I5 8H9

400: 3E4 2D6 1B6 6H2 9C4 8A6 7H6 **a48** 3B1 2B9 1G9 7C9 1C8 3C2 2G2 5H9 **p67r5** 9H5 2I5 **uFBIc7 w6B1** 6A9 4E9 4B8 **q6B bIc1 q1I s4Hr t6B5Fr oBFIc7 bIc7 c4r x1 x3** 3G8 8H8 **oADHc3 q9G e81r3 fEc v1568r1 dFc a85 q7E** 2E7 1F1 1E2 3D3 2H1 1I3 3H7 6I1 5D1 4A1 5B3 6B4 5C5 6E5 4F7 5F4 6D8 4H3 4I4 5G7 8C1 9A3 8B5 7B7 8F2 8E3 7F5 9D7 9E8 7E1 9G1 7G3 8I7

27   How were the sudokus made?

There is of course more than one method to make sudokus. Some concentrate on making pretty patterns with the given numbers. This seems to be quite a fashion. Of course, as soon as you have put some numbers all symmetry is lost anyway. We have created our sudokus in several different ways, some ignoring symmetry completely, some using some symmetry. The main thing we are interested in however is that with the methods that are allowed, the sudokus are as difficult as possible. This means that complexity is more important than symmetry.

All our methods start with generating a random final position. Because the method we use for this is relatively time consuming (we know faster ways but they give final positions that are very alike) we do this every 25 sudokus. We make them look different by applying some transformations to them like permuting the numbers, exchanging rows or columns within blocks, exchanging rows or columns of blocks etc. Because the difficult sudokus are rather rare (We generated 1 billion sudokus and took the 400 most difficult ones for this book), chances that even two of the sudokus use the same final position (if we do not look at the transformation that makes them look completely different anyway) are remote.

Next we make sure we have two subprograms ready: one to check whether a sudoku has more than one solution and one that can solve a sudoku if it needs only the methods we selected. The last subprogram is of course most work to construct. It is also important that these program segments are fast.

We construct the sudoku by taking out one number at a time, each time checking that the remaining configuration, when seen as a sudoku puzzle, has only one solution. We take these numbers at random. To do that, one needs a good pseudo random number generator. The pseudo refers to that we want to be able to reproduce these numbers in a different run, if

we choose so, because that allows us to catch errors in the program. But the random number generator should also allow for creating different sequences, so that we do not generate always the same sudokus. The book "The art of computer programming" by D. Knuth (vol. 2) gives several of such generators. One can also look in the internet.

If we take out a number and the puzzle it leaves has more than one solution we veto that position for future attempts and try randomly another number till no number that we take out gives a valid puzzle. Then we have a so-called minimal sudoku. If we are satisfied with the number of positions that is given (like no more than 30) we consider that we have generated a sudoku and now we decide to see whether it can be solved. As it turns out, the methods we use will solve about 75% of the sudokus that are generated this way. We just throw the remaining 25% away. Another thing that is noticed is that most of the sudokus generated this way are rather easy. They have the minimal difficulty and need none of the methods we mention. Not even pointing and/or claiming.

For generating the difficult sudokus we have in the book, we would have to generate about 5.5 billion sudokus. We want to do better with respect to difficult sudokus. This is not easy.

One way to try to improve the method is to see whether we can be more systematic about the final few steps, like trying all possibilities there. This requires more time per generated sudoku, but generated more non-trivial ones. Unfortunately we could not find any systematics in when a sudoku becomes difficult. It may well be that a sudoku is very easy till the last but one step and then when the last number is removed one has a super difficult one. The result was a bit disappointing as the yield of difficult sudokus per hour computer time was not higher than with the first method.

An improvement in generation speed is to build in some symmetry. Instead of taking out one number at a time we take two of which the positions are mirror images. This means that we have to check for unique solutions only half the time. The disadvantage is that we do not necessarily get a minimal sudoku, because in the end it may still be possible to take out some individual numbers in a non-symmetric way. The result is that although we generate twice as many sudokus per hour, there are fewer very difficult ones. Taking out 4 numbers at the same time to create even more symmetry unfortnately makes the program slower again. The failure rate is too high. We use this method only when we want to generate relatively easy sudokus, although those would still be classified as extreme in some collections.

What we try next is to use the symmetric method but then, in the end we try to take out individual numbers and see which one makes the sudoku more difficult. We take the number that makes it most difficult and then try again whether we can still take out another number that makes it even more difficult. This makes the program slower by a factor 4, but the yield per hour in very difficult sudokus increases considerably and is now almost three times higher than in the first program. This is the method we have actually used to generate the set of sudokus in the book.

One can try an other method of improvement by trying all combinations of numbers that can be removed in the final stage. In the method we described above the difficulty had to increase in each step. Now we take the maximum difficulty when all combinations of all steps in the final stage are considered. This does indeed give a higher percentage of difficult sudokus, but the extra time it takes is such that the yield per hour goes down. Hence we only used this method for study purposes.

For the (thusfar) most efficient method we have we had to make the observation that when one solves one of the generated sudokus, usually the first few moves are rather easy

and do not need any special methods. This means that after those moves the sudoku is still equally difficult. So we let the program make those first moves until it starts needing techniques and then start from that position taking out numbers again. If we have bad luck we end up with a sudoku that is equally difficult, but if we are lucky we obtain a more difficult sudoku. To ensure that we end up with difficult sudokus we start with the more difficult ones, like the ones that occur only once in 10000 generated sudokus. For those we try then a few hundred times. The result is rather spectacular. About 70% of the sudokus we submit to this procedure results in a more difficult one and our top category is expanded by a factor 30 or more while the computer time needed is increased only by a small percentage. In addition we obtain some sudokus that are even more difficult than what we generated before. We call this procedure difficulty boosting.

The final program was run on computers with an opteron processor which runs at 2.8 GHz. The 1 billion sudokus took 1860 hours of combined CPU time. As you may imagine, we did not print them all. For each degree of difficulty we collected in each of the 24 computers the first 1000 sudokus. It never found that many in the more difficult categories, so we did not lose very much doing this.

The examples were created with the unimproved program. Here we were interested in special sudokus that use, if possible, only one method but then as many times as possible. Those sudokus do not get a very high degree of difficulty in our counting, so the programs above would not select them easily.

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His interest in sudokus 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 sudokus in the collection of fiendish sudokus of the Times.

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