

## Part 2 – Variation MADNESS

U.S. Sudoku Team—Qualifying Test  
March 28, 2010

### 1. Double Dribble — 15 points

A 6x6 grid overlaps a portion of a Standard Sudoku. In the 6x6 grid, place a digit from 1 to 6 into each of the empty squares so that each digit appears exactly once in each of the following 18 regions: the six rows, the six columns, and the six outlined 3x2 regions.

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

←

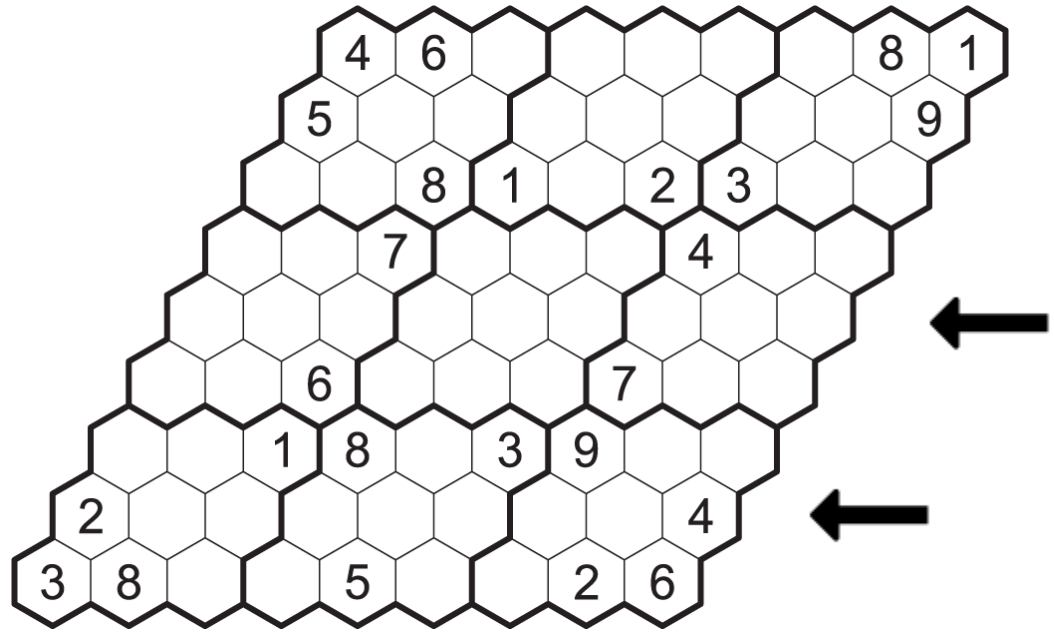
←

		6	4		
	3			6	
1					3
2					6
	5			2	
		4	6		

Answer: For the 9x9 grid only, enter the first row of digits, followed by the third row of digits.

**2. Fast Break — 10 points**

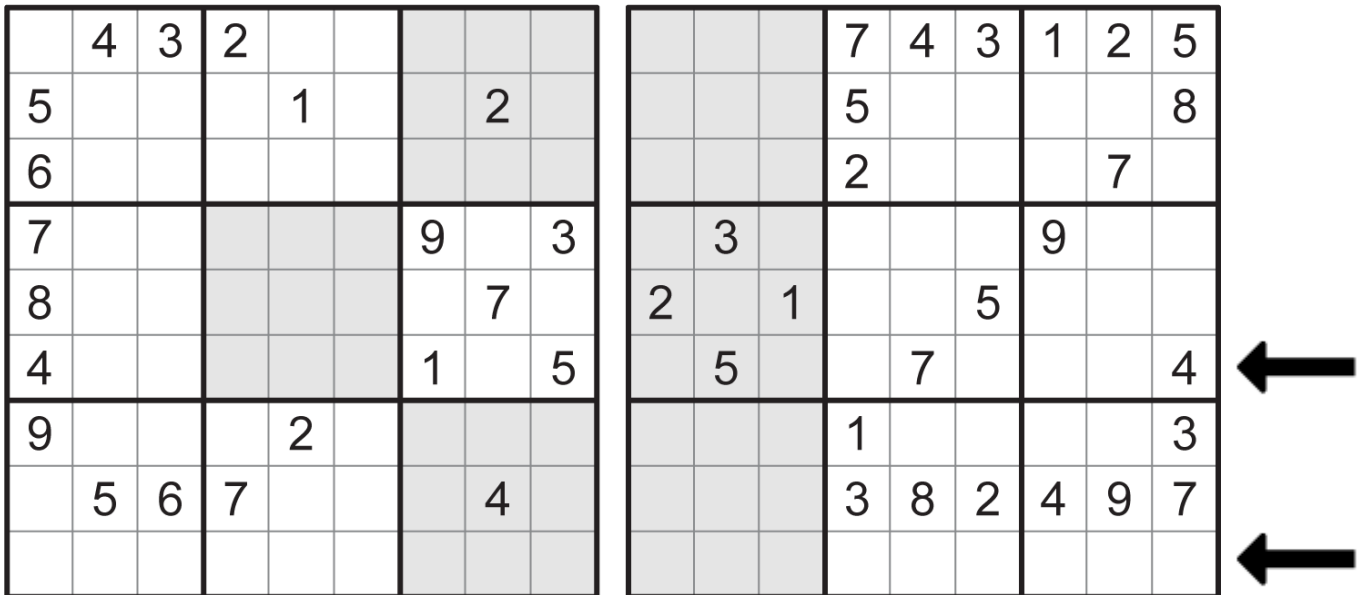
Place a digit from 1 to 9 into each of the empty cells so that each digit appears exactly once in each of the following 27 regions: the nine rows, the nine slanted columns in the "/" direction, and the nine outlined 3x3 regions. Additionally, each digit may appear no more than once in the "\"-slanted columns (which range in length from one to nine cells).



Answer: Enter the fifth row of digits, followed by the eighth row of digits.

**3. Triple-Double — 20 points**

Standard Sudoku rules apply. Additionally, the three shaded 3x3 boxes on the left correspond exactly to the three 3x3 boxes on the right, except that which corresponds to which is for you to determine.



Answer: For the right-hand puzzle only, enter the sixth row of digits, followed by the ninth row of digits.

**4. Point Spread — 25 points**

Standard Sudoku rules apply. Additionally, a small number between two squares is the one's-digit of the product of the digits in the corresponding squares.

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



Answer: Enter the fifth row of digits, followed by the eighth row of digits.

**5. Elite Eight — 25 points**

Combine adjacent pairs of 4-square regions to make eight contiguous regions of eight squares, thus creating an 8x8 irregular Sudoku: place a digit from 1 to 8 into each of the empty squares so that each digit appears exactly once in each of the following 24 regions: the eight rows, the eight columns, and the eight newly created regions.

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



Answer: Enter the third row of digits, followed by the sixth row of digits.

**6. Possession Arrow — 20 points**

Arrow Sudoku: Standard Sudoku rules apply. Additionally, each circled digit is the sum of the digits along the path of the corresponding arrow.

(Reminder: Sudoku rules allow a digit to appear more than once along a single arrow.)

<input type="text"/>			5		6		<input type="text"/>
	5			<input type="text"/>			8
		6		1		5	
7					<input type="text"/>		2
	6	<input type="text"/>				<input type="text"/>	1
5			<input type="text"/>				6
		4		2		7	
	7		<input type="text"/>				9
<input type="text"/>			7		4		<input type="text"/>



Answer: Enter the seventh row of digits, followed by the ninth row of digits.

**7. One On One — 25 points**

Standard Sudoku rules apply. Additionally, a small number is the result of the corresponding arithmetic operation applied to the two neighboring digits. A slash indicates that the corresponding two diagonal neighbors are used.

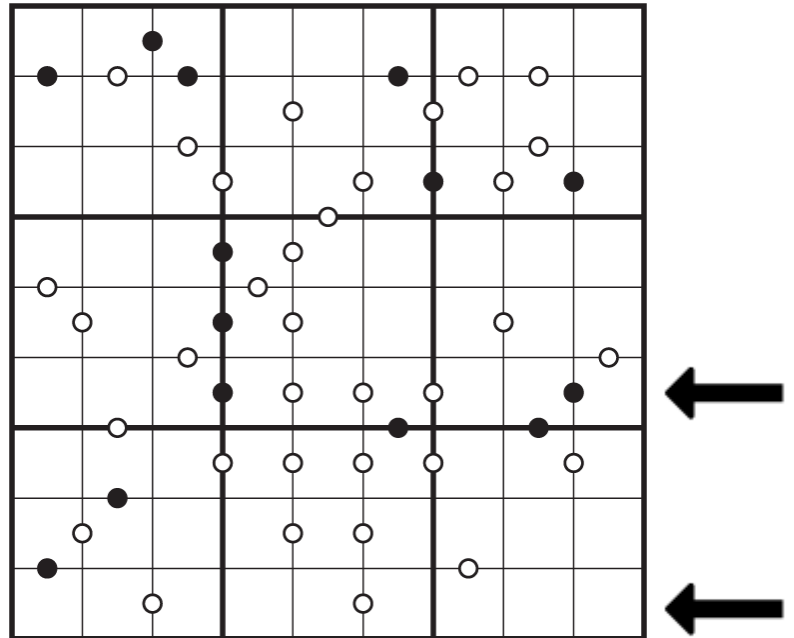
		48x					
							5+
		9+		21x			
		6-					
3÷							
	\9+			4+			
		2-					
			10+		\15x		
	6+						
	\56x					1-	
						7+	
	\2÷		/21x			/14x	



Answer: Enter the fifth row of digits, followed by the ninth row of digits.

**8. Key Violation — 25 points**

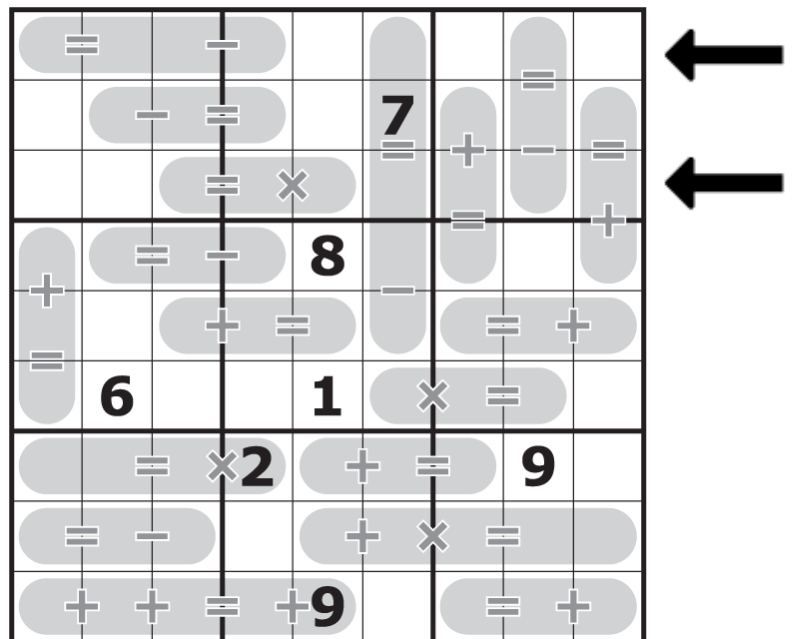
Kropki Sudoku: Standard Sudoku rules apply. Additionally, a segment has a black dot if and only if one neighboring digit is twice the other; a segment has a white dot if and only if one neighboring digit is one more than the other. In the case of a 1 and 2 in neighboring squares, then the dot between them could be of either color.



Answer: Enter the sixth row of digits, followed by the ninth row of digits.

**9. On the Bubble — 25 points**

Standard Sudoku rules apply. Additionally, each grey region contains an equation reading across or down. Normal operator precedence applies (multiplication before addition).

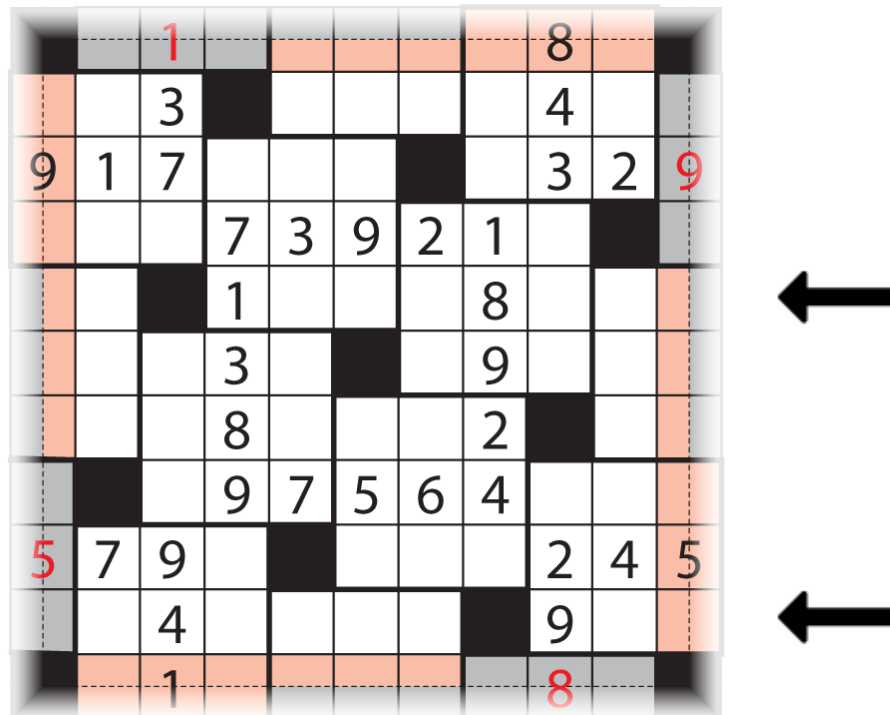


Answer: Enter the first row of digits, followed by the third row of digits.

### 10. Wrap Around — 20 points

10x10 Toroidal Sudoku: place a digit from 1 to 9 into each of the empty squares so that each digit appears exactly once in each of the following 30 regions: the ten distinct rows, the distinct ten columns, and the ten distinct outlined 3x3 regions.

Rows and columns will wrap around the edges of the grid like a torus. For example, the red digits represent the "same digit" as the black digits on the opposite edge of the grid, and are part of the "same row" or "same column".



Answer: Enter the fourth row of digits, followed by the ninth row of digits.

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End of Part 2

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