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Total	1000

#### Total Time - 90 minutes

Start Time - 14:30 IST, 14<sup>th</sup> Feb 2010

#### Please note

- Answers will be accepted only using the website. Please familiarize yourself with solving and submitting the examples.
- Answers will not be accepted after the stipulated period.
- Time bonus (5 points per minute saved) will be awarded only if all Sudokus are solved correctly.
- Examples don't reflect the difficulty of the Sudokus in the test.
- In all Sudokus, standard rule "Every column, every row and every 3X3 box must have digits from 1 through 9" apply.
- If you are solving on paper, you don't need to enter all the 81 digits. Click on "Show Cells to Fill". Enter the "marked cells". Note "Show cells to Fill" will be activated 45 minutes after the test starts.

### **Equal Product Sudoku**

A cross at a corner marks group of 4 cells in which two pairs of diagonally opposite digits multiply to same product.

•	,			5	6			
			7			8	5	
		7	8			,	3	
	5	6						3
8 (	,							9
8						5	8	
	7				9	3 (		
	3	1			2	,		
			1	6				

1	, 2	8	3	5	6	4	9	7
3	`6	4	7	9	1	8	5	2
5	9	7	8	2、	4、	, 1	3	6
7	5	6	9	4	`8	`2	1	3
8	4	3	2	1	5	7	6	9
2	1	9	6	3	7	5	8	, 4
6	7	5	4	8	9	3、	, 2 <sup>'</sup>	`1
9	3	1	5	7	2	6	`4	8
4	8	2	1	6	3	,9	7	5

## **Symbol Sudoku**

There are some symbols that touch either 2 or 4 cells; the same digits must appear in the cells touched by a symbol each time that symbol occurs, but the digits can appear in any order.

For example, please check <a href="http://motris.livejournal.com/96657.html">http://motris.livejournal.com/96657.html</a>

### **Snail Sudoku**

Along the path of the snail, no two consecutive cells can have consecutive digits.

2	<b>*</b>	$\rightarrow$	$\rightarrow$	5	$\rightarrow$	$\rightarrow$	$\rightarrow$	7
	7	$\rightarrow$	<b></b>	1	$\leftarrow$	$\rightarrow$	တ	*
		6	$\rightarrow$	2	$\rightarrow$	3		*
<b>A</b>	<b>A</b>	ゴ	2	$\rightarrow$	4	¥	¥	<b>Y</b>
6	1	2	Ļ		×	7	4	3
<b>A</b>	<b>A</b>	<b>A</b>	7	<b>*</b>	1		Y	*
<b>A</b>	<b>A</b>	8		7	<b>—</b>	5	Y	<b>Y</b>
4	5			4	$\leftarrow$	<del></del>	3	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
4				8				1

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

#### 4 In a Row

The straight line passing through 4 cells (horizontally / vertically / diagonally) contain the same digits in same order. However, the directions could be different. [The example does not have any diagonal line.]

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

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

### **Sum Line**

There are some marked lines passing through 3 cells. In every line, one cell is the sum of other two cells. [ Please be careful about the two lines sharing the same cell, e.g. D1 in the example below.]

	6	<b>-</b>	9	٩		9	4	
7			9	A	9		5	•
4	တ	9	2	8	1	P		
			8	٩			7	•
		6	•	6	10	8	·	•
-			•		9	P		
			•	4	8	A	9	6
	5	-	-	-	9		6	3
	7	9		•	-	-		

2	6	5	1	7	3	9	4	8
7	3	8	9	6	4	2	5	1
4	9	1	2	8	5	3	6	7
9	4	3	8	1	6	7	2	5
5	2	6	3	9	7	8	1	4
1	8	<b>-7</b>	4	5	2	6	3	9
3	1	2	7	4	8	5	9	6
8	5	4	6	2	9	1	7	3
6	7	9	5	3	1	4	8	2

# Mini Diagonal Sudoku

All the marked mini diagonals must have distinct digits.

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

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

Find X!

There is <u>always</u> a circle between two cells, where either the sum or the difference is X.

	5	(	) 			4		
8			•	(	4		(	<b>)</b>
				© <b>9</b>				6
(			7				6	
	(	<b>2</b>	•			1		
	4		<b>-</b> ⊚-		5	<b>D</b>		
4		0		5			(	) )
		—⊚—	3					5
		5		(	—⊚— )		8	

1	5	6 @	2	8	3	4	7	9	
8	7	9	6	1	4	2	<b>5</b> <sup>©</sup>	3	
2	3	4	5	9	7	8	1	6	
9 @	1	8	7	3	2	5	6	4	
5	6 <sup>©</sup>	<b>2</b>	9	4	8	1	3	7	
7	4	3	_⊚_ 1	6	5	<sup>⊚</sup> 9	2	8	
4	2	7	8	5	6	3	9 @	1	
6	8	<b>1</b>	3	2	9	7	4	5	
3	9	5	4	7 @	4	6	8	2	
X = 8									

#### **Odd Or Even Count**

Some cells are shaded. If a shaded cell is Odd, it represents the number of Odd neighbors (horizontal / vertical / diagonal) of that cell. If the shaded cell is Even, it represents the number of Even neighbors.

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

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

## **Touchy**

Each digit touches, vertically or horizontally, at least one consecutive digit. E.g, every 3 touches at least a cell containing 2 or 4.

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

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

# **Symmetric Unequal**

Cells that are  $180^{\circ}$  symmetric to each other can't have same digits. [e.g. when rotated  $180^{\circ}$  C3 becomes G7, F1 becomes D9]

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

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