Puzzles of September's Contest

Riad Khanmagomedov

Submissions should be sent with answer page at http://diogen.h1.ru/cgi-bin/contest/start.pl not later than 24-00 (of Moscow time) September 25 of 2010.

If you have any question write to forum http://www.forsmarts.com/forum/

1. Five Chains

Fill in white cells with digits from 1 to 5. Centres of cells with the same digit should form a chain without touching or intersecting itself. All links of this chain should have length N (horizontally, vertically or diagonally).
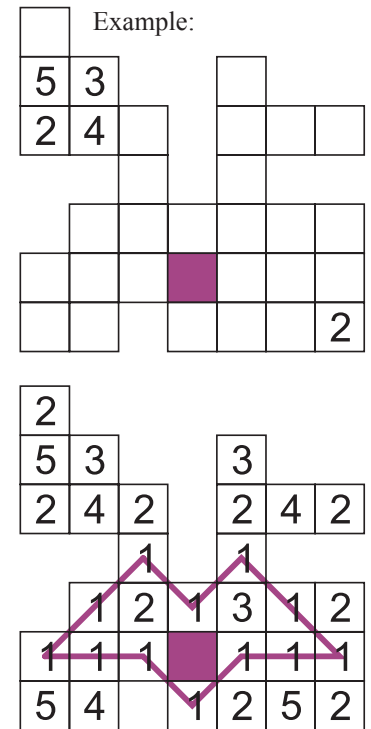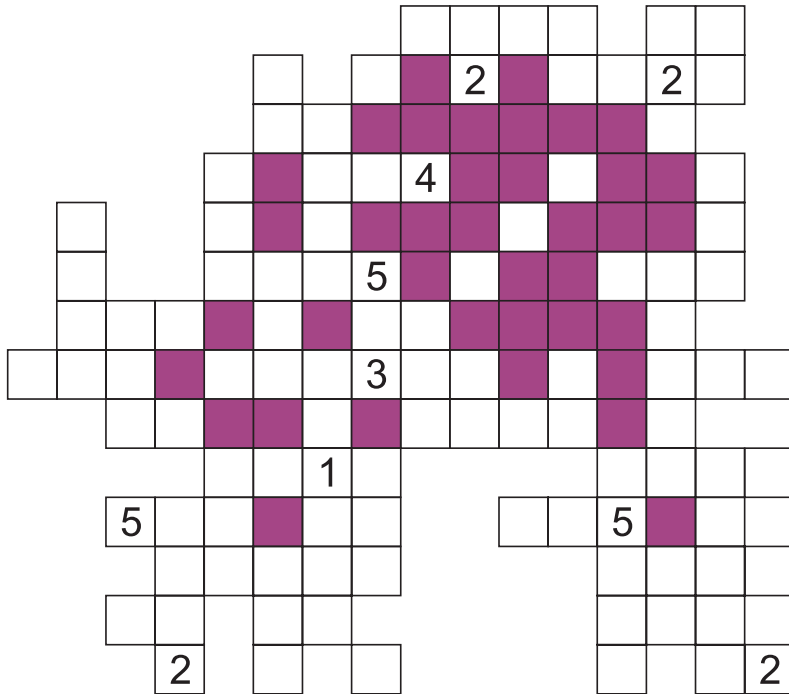
Answers format: write the number of straight segments in chain of digit 1. For the given example the answer would be: 8.

Score: 5 points.

2. Easy as What?

Write letters A, B, C, D into the cells. Each line of any of three directions should have each letter exactly once. Letters outside the grid show the letter which is the first or the second in the corresponding direction. Cell with "X" sign doesn't contain any letter.
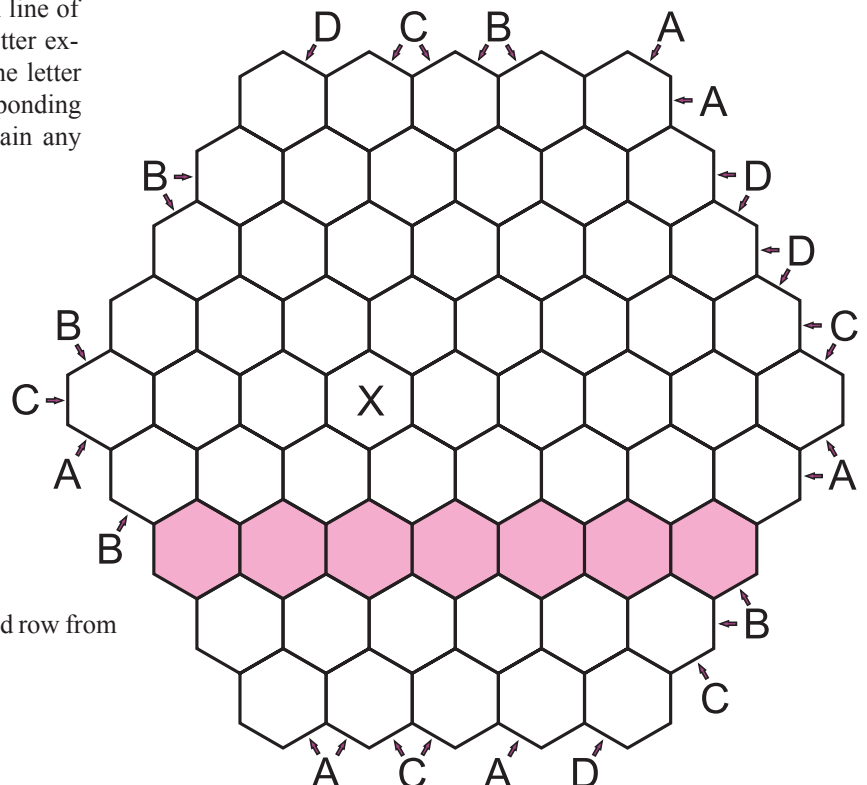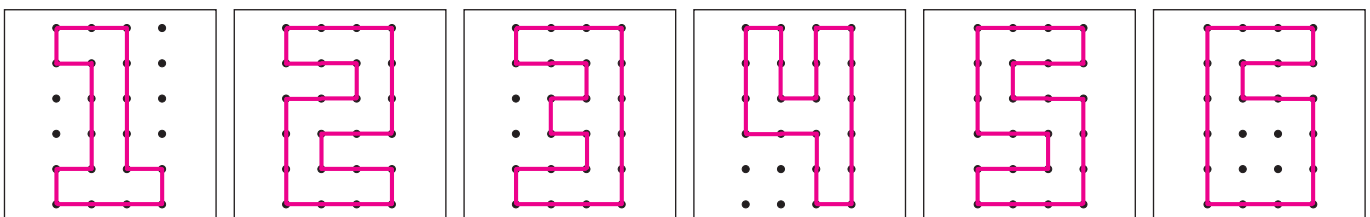
Answers format: write content of the marked row from left to right. Use "X" for empty cells.

Score: 8 points.

3. Fensudoku

Put the given fences which represent digits 1-6 into the grid. Fences can not be rotated. Each row, column and outlined area 2 x 3 should contain different fences. Number in the cell show the number of cell's sides which belongs to the corresponding fence.

4. Pairs

Fill in the grid with digits 1-9. Each row and column should contain different digits. Difference between the first and the second digits of any row (or column) should be equal to the difference between third and forth digits of the same row and also equal to the difference fifth and sixth digits.

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

Example:

6	8	3	5
9	4	1	6
1	2	7	8	⇒
4	6	9	7

Answers format: write the content of marked row. For the given example the answer would be: 1278.

Score: 6 points.

5. Letters

Write given letters into some cells of the grid. Letters can not be rotated or reflected. All letters form single closed loop which cannot touch or intersect itself. Letters outside the grid show which letter should be in corresponding row or column (in any order). Letter I is drawn at the cells edge, but belongs only to the left cell.
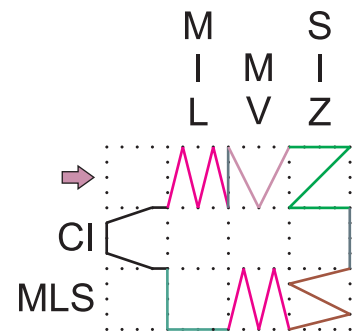

Example:

Answers format: write the content of marked row from left to right. For the given example the answer would be: MIVZ.

Score: 6 points.

6. Baker's Dozen

Write numbers 1-13 into white cells of the first grid. Number cannot touch each other by a side. Then move each digits to the neighbouring (by a side) cell and obtain the second grid. Numbers cannot touch each other again. Then move them one more time and obtain third grid. The numbers outside show the sum of numbers in corresponding row or column of their grids.

Example for numbers 1-5:
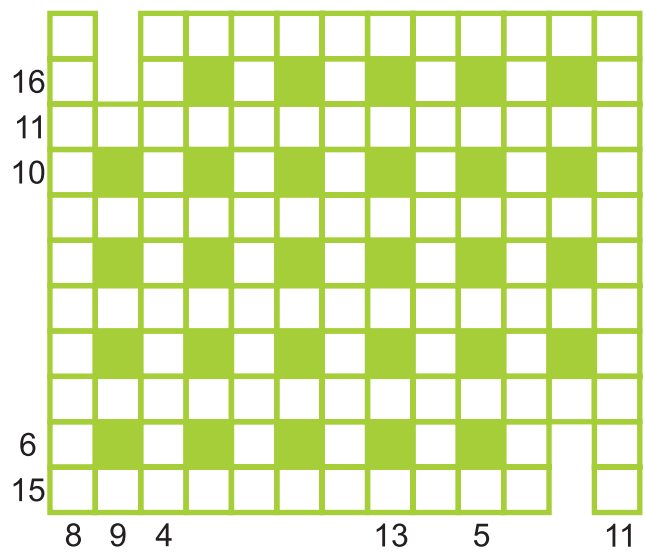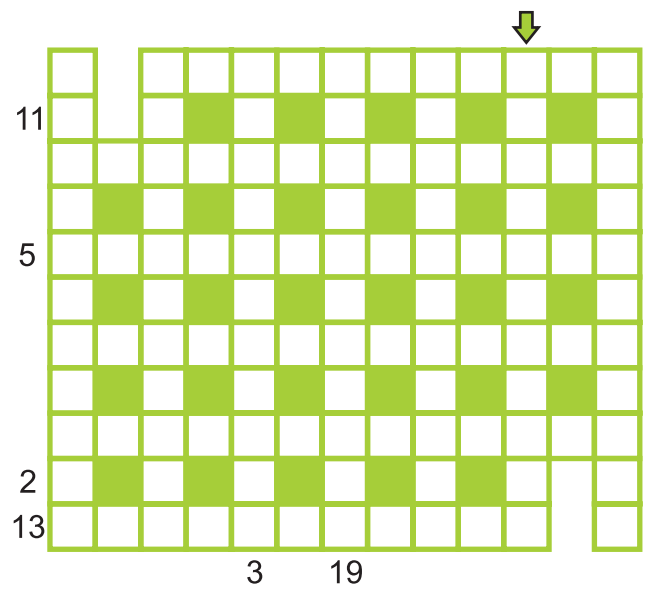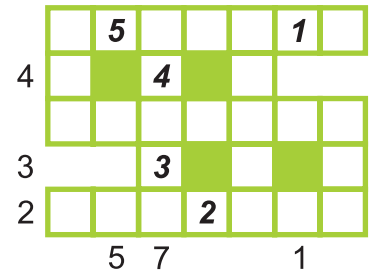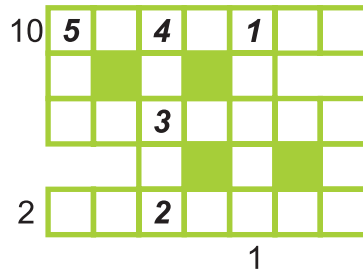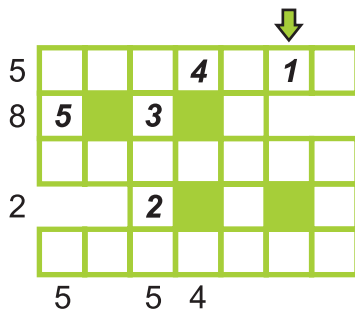
Answers format: write the content of marked column from top to bottom. Use "-" for empty cells. For the given example the answer would be: 1--.

Score: 7 points.

7. Town

Put some residential areas - dark rectangles with sides at least 2 units into the grid. Rectangles cannot touch each other even diagonally. All white cells are streets - it cannot form 2x2 squares. Numbers outside the grid show the number of white cells in corresponding row or column.
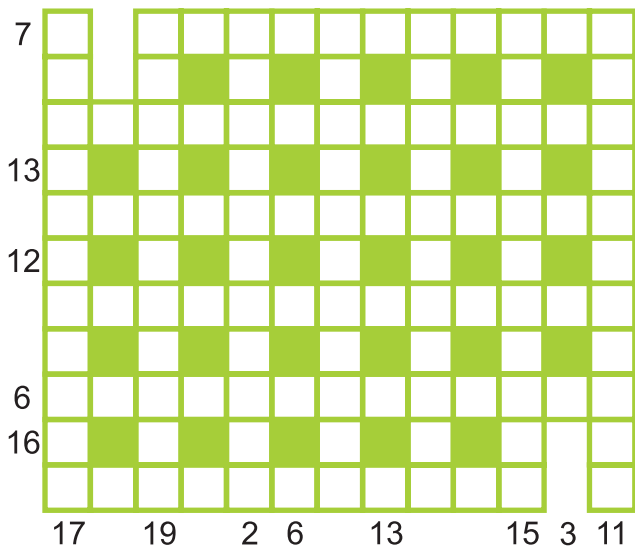

Example:

Answers format: write the content of marked row from left to right. Use G for dark cells and W for white cells. For the given example the answer would be: GGGWGG.

Score: 7 points.

8. Cards Snake

There are some values for jacks (J), queens (Q), kings (K), aces (A) and four suits: J=1, Q=2, K=3, A=4, spades=1, clubs=2, diamonds=3, hearts=4. The value for a card is equal to the product of corresponding values. For example, jack of spades = 1, jack of clubs = 2 and so on as in the given table. Form a snake using this cards (each card is a rectangle 1x2). Snake is a single line with one cell width which cannot touch itself even diagonally. Numbers on the top show the number of occupied cells in corresponding row. Numbers at the right and in the bottom - the sum of values of cards in the corresponding row or column. Suits outside the grid give all suits which should be in the corresponding row or column.
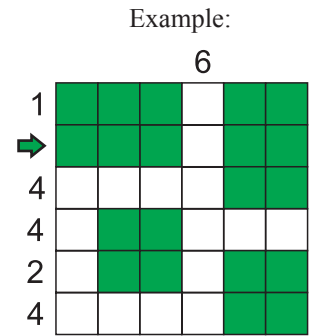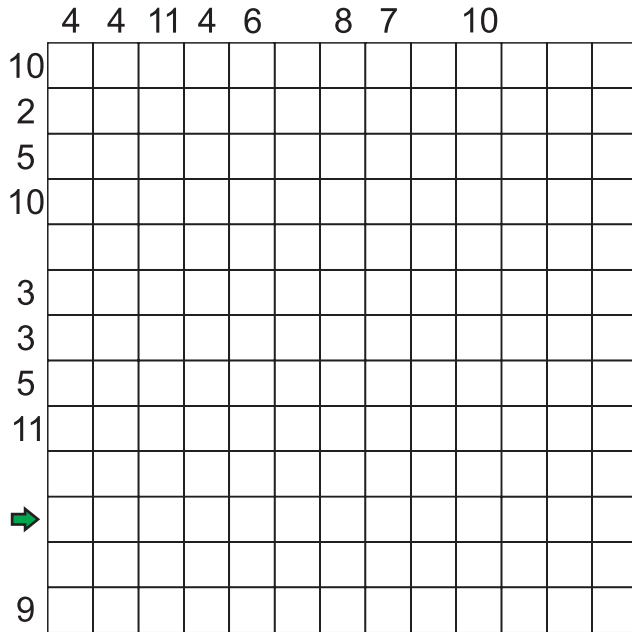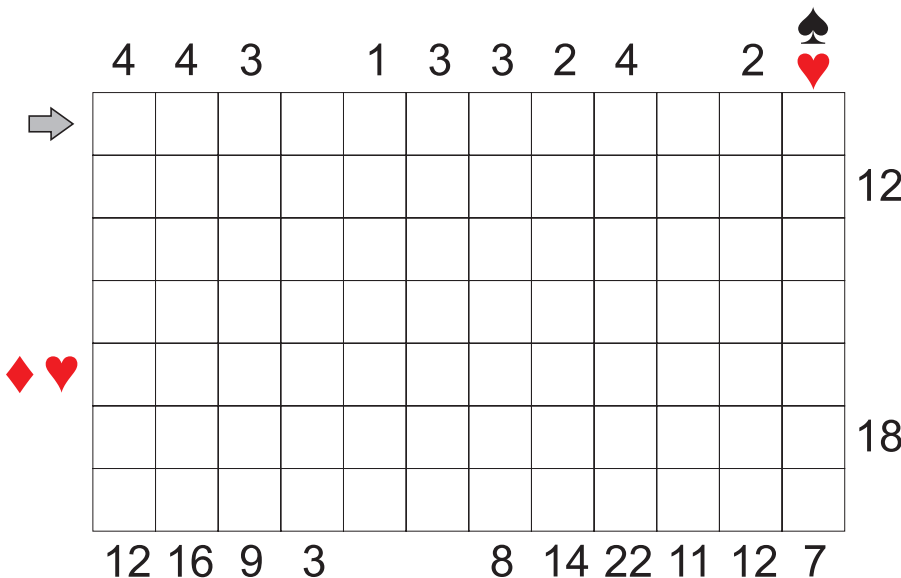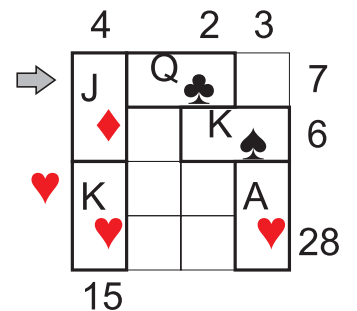

Example:

Answers format: write letters which are in the top row from left to right. For the given example the answer would be: JQ.

Score: 8 points.

9. Draw Sudoku

Blacken some sells in the grid. Numbers outside show the lenths of all black blocks in the corresponding row or column. There should be at least one cell between two blocks. Sign "?" means any number greater then 0. Each 3x3 square should have exactly one white cell and all digits in white cells should satisfy sudoku rules: rows, columns and outlined areas formed by nine 3x3 squares shoud have each digits exactly once.

Example:

Left clues (rows):

4 19 ?

? 12 ?
? ? 6 ?

? 9 ?
? 6 ? ?

? 6 ? ?

? ? ? ?

? ? ? ?

? 3 ?
12 ? ?

Top clues (columns):

?	?		?		?	?		?			?	?	
?	3		?	3	?	10		?	?				
?	6		?	?	15 ?	?		7	10				
10	?		4 ?		? 6	?		?	?				

Answers format: write the content (digits in white cells) of main diagonal from top left to bottom right corner formed by 3x3 cells. For the given example the answer would be: 3124.

Score: 8 points.

10. Tricolour

Write some of the names of participants of April's contest into the grid. You cannot use the same name twice. Each cell can contain only one letter and names should be read going from cell to cell through edges. Each cell can be used only once. Letter cannot repeat in rows of any of three directions. Cells with the same letter should have the same colour (in the example all letters A in white cells). Maximized the number of used cells.
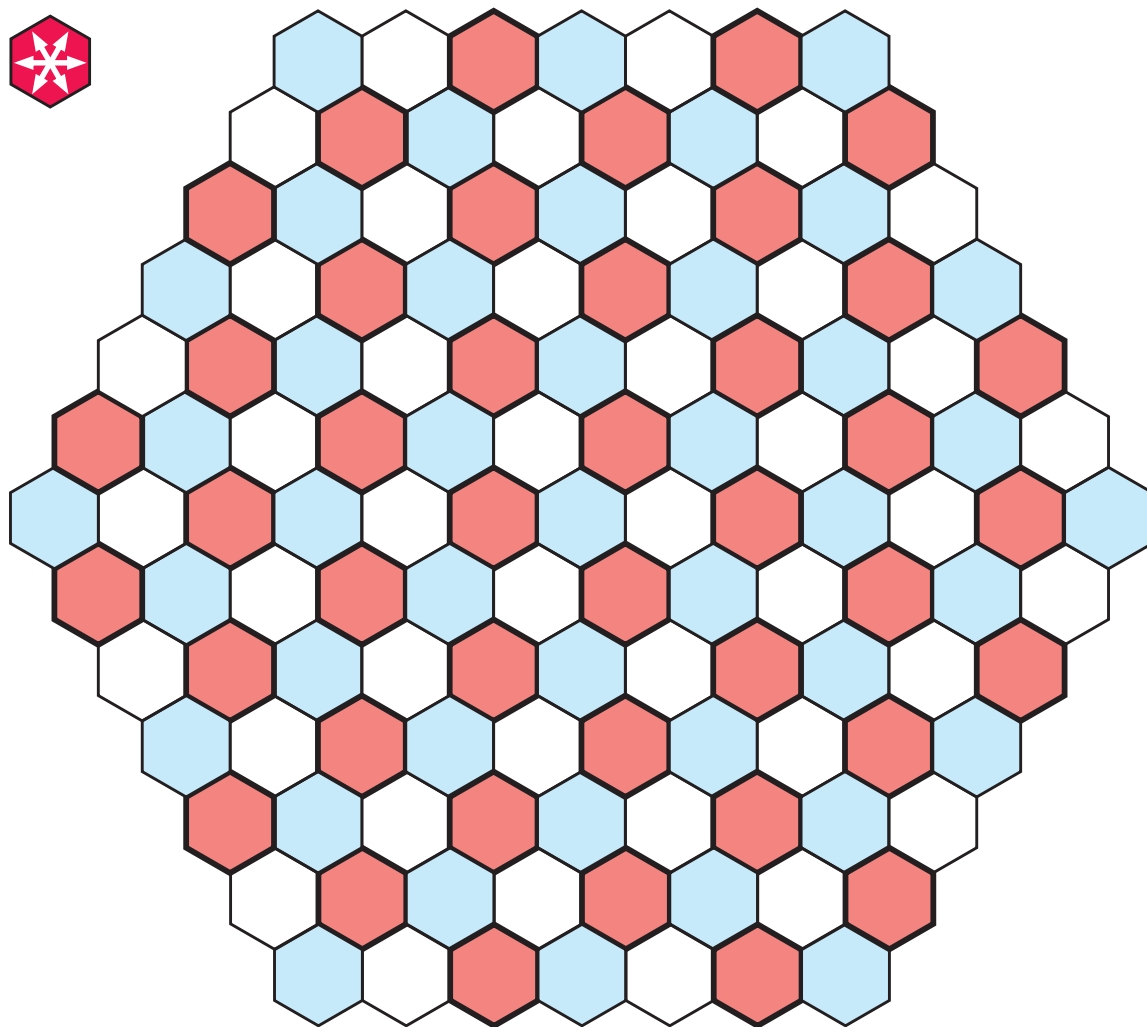
Alberto
Anatoliy
Andrey
Anitei
Anti
Anurag
Aytac
Boris
Christian
Danijel
Dmitry
Dragan
George
Giovanni
Hideaki
Igor
Ivan
Kresimir
Makoto
Mark
Nikola
Paolo
Rakesh
Sergey
Serhat
Sladjana
Stefano
Takuya
Taro
Tatyana
Timothy
Tomoaki
Vasiliy
Viktor
Vlad
Yuka
Zoran

Example:
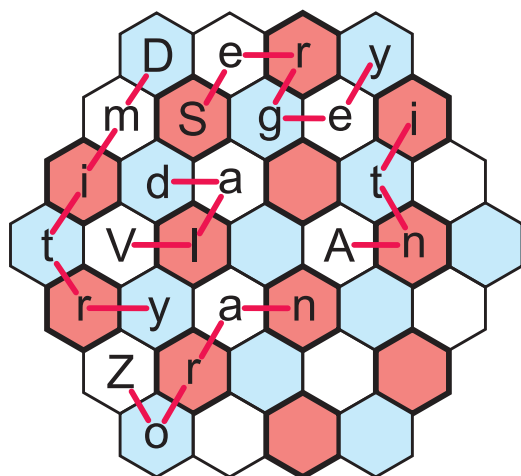
Answers format: write first the number of used cells, then content of the grid row by row from left to right. Mark the start letter for each name with capital letter, use "-" for empty cells.
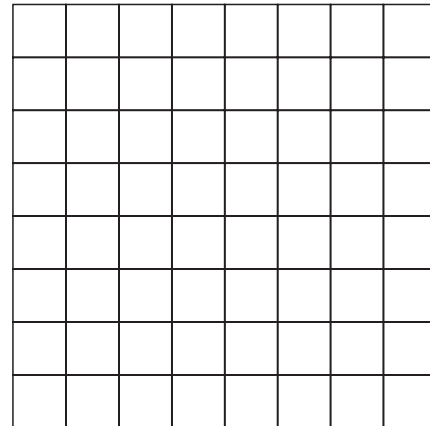For the given example the answer would be: 25; Dery, mSgei, ida-t-, tVl-An-, ryan--, Zr---, o---.

Score: 13, 12, 11...3, 2, 1 points for the thirteen best solutions.

11. Visible sums

Write digits 1-9 into some cells of 8x8 grid. Each digits should be equal to the last digits in sum of all digits which are in the same row or column. Each digit used at the first time give you 3 points, at the second time - 2 points and at the third time - 1 point. Next times do not give you any points. For example, if you use digits 7 five times then it gives you 6 points (3+2+1+0+0). Maximized the sum of your point.

Example:

| 1	5	
6		5
	4	9

Answers format: at first write you sum, then the content of the grid row by row using 0 for empty cells. For the given example the answer would be: 17; 150, 605, 049.

Score: 13, 11, 9...3, 1 points for the seven best solutions.

12. Golf

Choose any cell (except B2) of 10x10 grid to start. Strike the ball into any of eight directions. The length of one strike should be prime number: 2, 3, 5 or 7 cells. In a series od strikes use the last cell of previous strike for the next. Ball rebounds from the wall at the same angle. In the grid corner ball doesn't change direction (for example after top left strike from A0 of length 2 it goes to B1). Find some different series of strikes (each series starts at the same chosen cell and ends at B2). You cannot use the same cell (as strike end cell) twice and cannot use the same border point (is rebounding point) twice during all series. Each series of N strikes gives you 10 - N points. Maximize sum of the points.
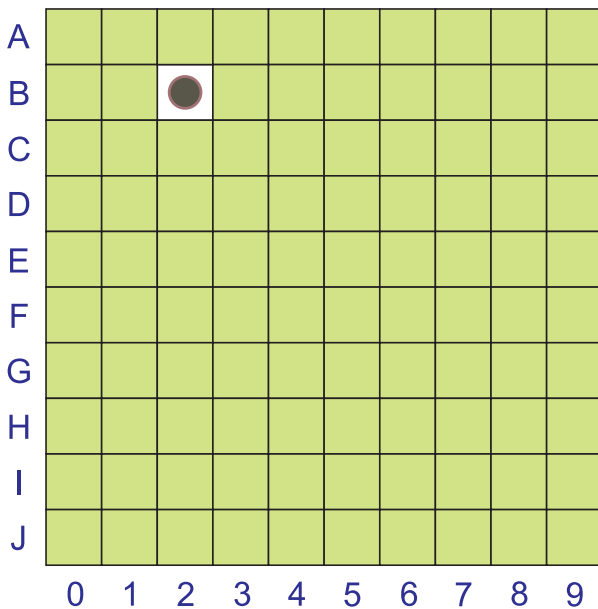
Example (all used points are marked):

9: UR5 - it's a strike from D0 to B2 with rebounding from top right corner.

8: L5-UR2 - it's a series from two strikes. The first from D0 to the left with rebounding from left, then right edge. The second to B2 with rebounding from right edge.

Answers format: first write your sum and starting cell, then describe each series and their points. Use letter for direction of strike:: D (dawn), U (up), R (right), L (left), DR (down-right), DL (down-left), UR (up-right), UL (up-left) and number for the strike's length. For the given example the answer would be: 40, D0; 9: UR2; 9: UR5; 8: U2-R2; 8: L5-UR2; 6: U3-R2-D3-U2.

Score: 13, 12, 11...3, 2, 1 points for the thirteen best solutions.