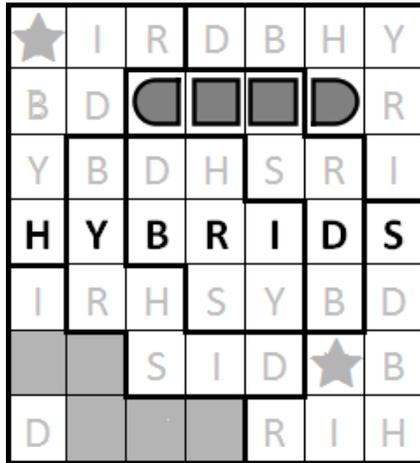


# LMI Monthly Test



**March 12<sup>th</sup>/13<sup>th</sup> 2011**  
**Duration: 120 minutes**

**Puzzles by Bram de Laat**

Thanks to:

Logic Masters India for hosting

Fred Coughlin and Maarten Löffler for testing and advice

Deb Mohanty and Rakesh Rai for advice on puzzle booklet

Helen Arnold for layout

# Puzzles

- |      |                                  |        |
|------|----------------------------------|--------|
| A1.  | Slitherlink                      | 40 pt  |
| A2.  | Seethrough                       | 60 pt  |
| A3.  | Corral (easy)                    | 20 pt  |
| A4.  | Corral (hard)                    | 80 pt  |
| B1.  | Worms                            | 20 pt  |
| B2.  | Jigsaw Sudoku                    | 80 pt  |
| B3.  | Worm Sudoku (easy)               | 40 pt  |
| B4.  | Worm Sudoku (hard)               | 80 pt  |
| C1.  | Skyscrapers                      | 30 pt  |
| C2.  | Outside Sudoku                   | 80 pt  |
| C3.  | Outside Skyscraper Sudoku (easy) | 40 pt  |
| C4.  | Outside Skyscraper Sudoku (hard) | 100 pt |
| D1.  | Star Battle                      | 50 pt  |
| D2.  | Battleship                       | 60 pt  |
| D3.  | Sea Battle (easy)                | 30 pt  |
| D4.  | Sea Battle (hard)                | 70 pt  |
| E1.  | Penta                            | 50 pt  |
| E2.  | Myopia                           | 70 pt  |
| E3.  | Pentopia (easy)                  | 30 pt  |
| E4.  | Pentopia (hard)                  | 70 pt  |
| Xtra |                                  |        |
| X1.  | Dice                             | 30 pt  |
| X2.  | ABC                              | 120 pt |
| X3.  | Alphanumeric dice (easy)         | 60 pt  |
| X4.  | Alphanumeric dice (hard)         | 90 pt  |

## Puzzles

This test focuses on hybrids of familiar and less familiar puzzle types. There are 6 sections of 4 puzzles; 5 main sections and a bonus section. Each section has 2 puzzle types followed by a hybrid which tries to incorporate the solving techniques of both genres into one puzzle. Each hybrid will have a small and a big puzzle.

The bonus section consist of an easy, medium, hard and extra hard puzzle, which can be appropriately chosen to score extra points after solving the 20 main puzzles.

## Layout

The test is split up into a left and right side. The left side is made up of easy and medium puzzles, while the right side are medium and hard ones. However, in the instruction booklet the positions won't always match easy/hard. Puzzles numbered 1-3 will be easier and 2-4 will be harder.

The required answer key will be given in a box on the right-hand side of the page, under the instructions.

## Scoring

There are 20 puzzles for a total of 1100 points and 4 bonus puzzles for 300 points. The bonus section only scores if at least 18 main puzzles are solved correctly and works in place of a time bonus. So be sure you are correct before attempting these puzzles.

There's also a percentile bonus for solving a certain number of puzzles correctly on each side.

### Bonus system:

Puzzles solved correctly	Left-hand side	Right-hand side
3-5	20%	10%
6-8	30%	20%
9+	40%	30%

For example: if you were to solve 7 easy puzzles for 220 points and 4 hard puzzles for 320 points, you will score  $220 * 1.3 + 320 * 1.1 = 638$  points.

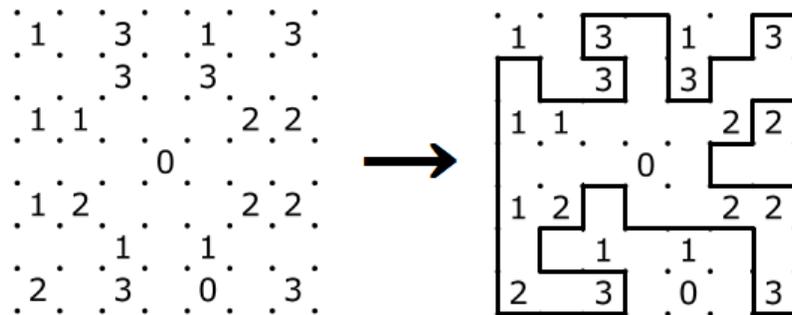
**Lastly: Have fun!**

### A1. Slitherlink

40 pt

Draw a closed loop through the diagram by connecting some of the dots horizontally or vertically. The loop can't touch or cross itself. The digits give the number of loop segments directly above, below, to the left, or to the right of the digit.

Enter the number of cells outside the loop for each row.



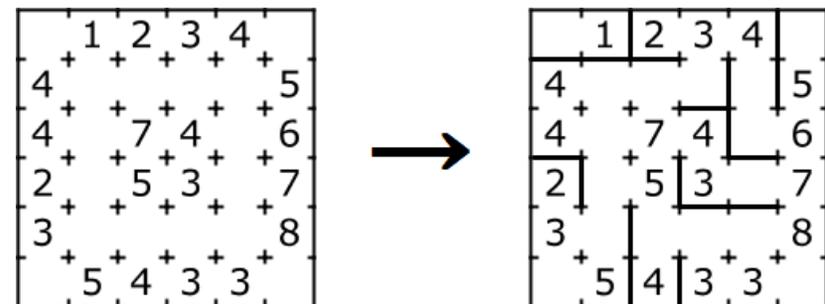
Answer Key: 4312153

### A2. Seethrough

60 pt

On this blueprint every square denotes a room. Some doors between rooms have to be closed. Open doors allow you to look into other rooms. If a square contains a number, this number indicates how many rooms can be seen from that position, the room itself excluded.

Enter the number of doors in each row and each column.



Answer Key: 221212, 211220

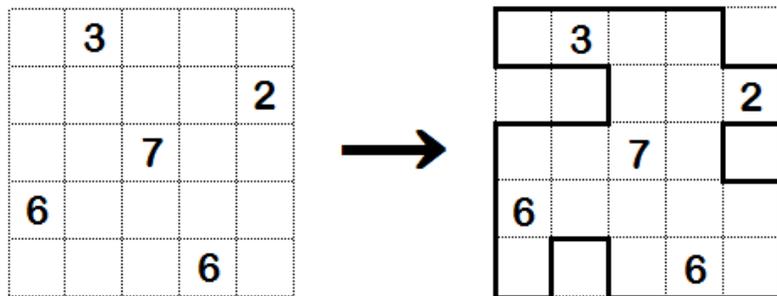
### A3/4. Corral

20/80 pt

Draw a loop around all the numbers in the grid. The loop runs over the gridlines. Each number represents the amount of cells that can be seen from that cell, NOT including the cell itself.

*NOTE: Normal corral includes the cell itself. The puzzle has been changed it here to keep in line with the seethrough to avoid counting mistakes.*

Enter the number of cells outside the loop for each row.



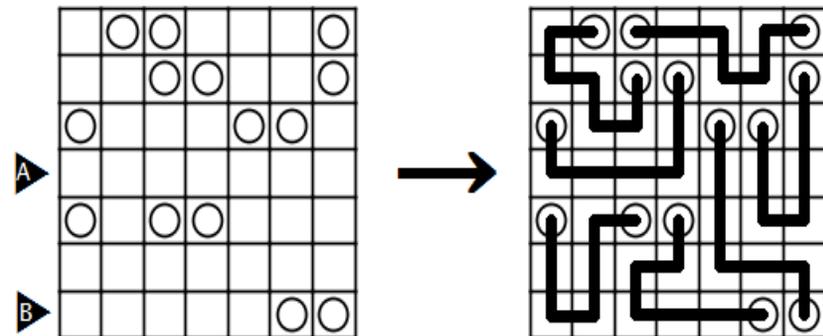
Answer Key: 12101

### B1. Worms

20 pt

Draw 7 worms of length 7 cells each in the grid. Each worm consists of a path of horizontally and vertically connected cells that run from head to tail. All cells are used, and all heads and tails are given. Worms can touch themselves. Heads and tails look the same.

Enter the contents of indicated rows. Use S for straight, T for turn and O for head/tail.



Answer Key: TSSTSSS, TTTSSOO

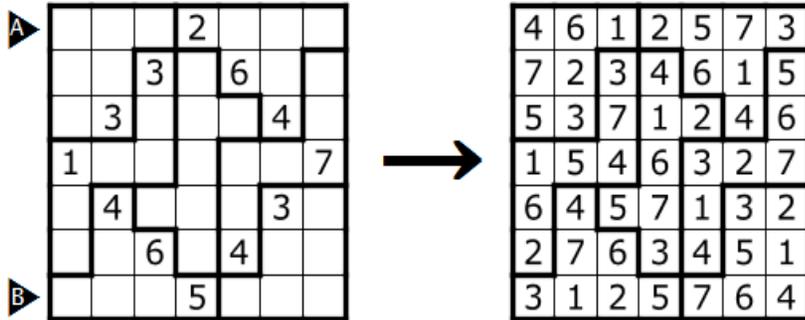
## B2. Jigsaw Sudoku

80 pt

Enter the digits 1-7 in each row, column and boldly marked area.

Note: The puzzle in the contest will have 1-9.

Enter the digits in the marked rows.



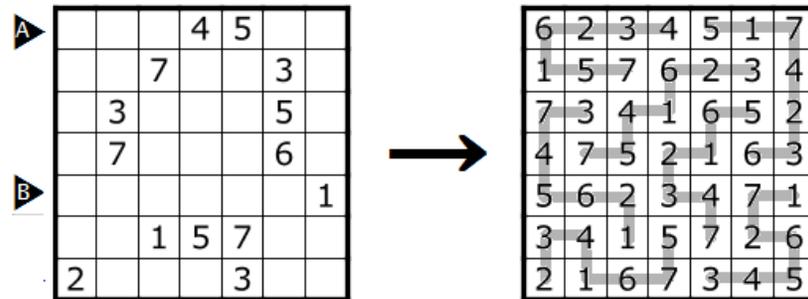
Answer Key: 4612573, 3125764

## B3/4. Worm Sudoku

40/80 pt

Place the digits 1-7 (or 1-8) once in each row and column. Also draw 7 (or 8 worms) size 7 (or 8) in the grid. Worms consist of a path or horizontally and vertically adjacent cells from head to tail. All cells are used. Worms can touch themselves. The heads and tails are indicated by the given digits. Each worm contains the digits 1-7 (or 1-8) exactly once.

Enter the digits in the marked rows.



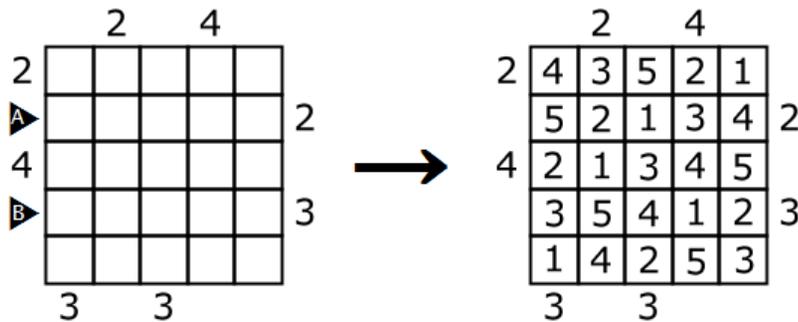
Answer Key: 6234517, 5623471

### C1. Skyscrapers

30 pt

Enter the numbers 1-5 once in each row and column. The numbers represent skyscrapers of that height. The numbers around the diagram denote how many skyscrapers are visible from that direction: higher skyscrapers block lower ones.

Enter the digits in the marked rows.



Answer Key: 52134, 35412

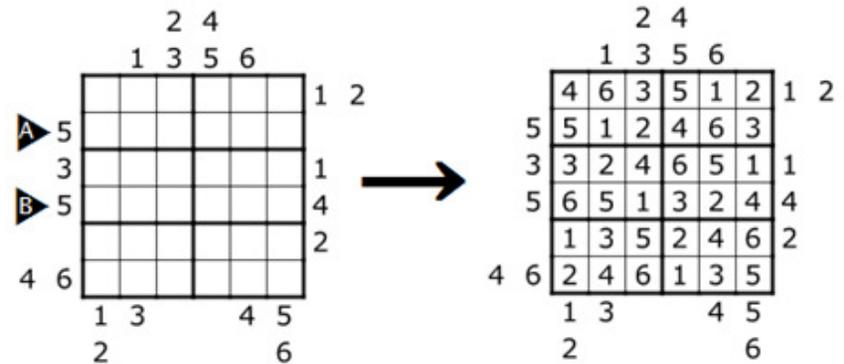
### C2. Outside Sudoku

80 pt

Enter the digits 1-6 in each row, column and marked 2 by 3 area. The digits outside the grid indicate that that digit appears in the first 2 by 3 area seen from that side.

Note: The puzzle in the contest will have the digits 1-9 in 3x3 blocks.

Enter the digits in the marked rows.

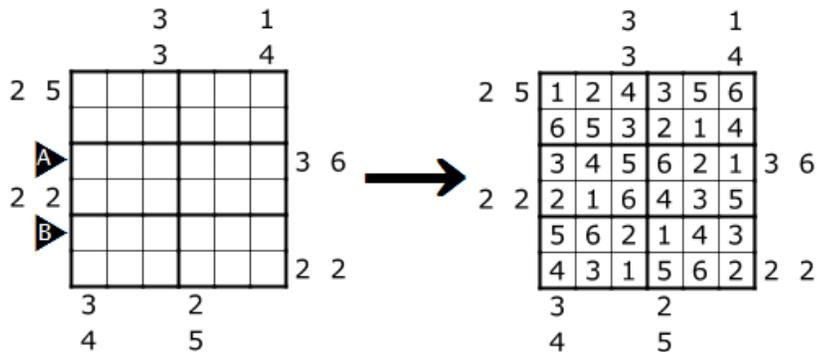


Answer Key: 512463, 651324

### C3/4. Outside Skyscraper Sudoku 40/100 pt

Enter each digit from 1-6 (or 1-9) in each row, column and marked 2x3 (or 3x3) area. The pairs outside consist of one outside sudoku and one skyscraper clue, for you to determine which is which. An outside sudoku clue indicates that that clue appears in the first 2x3 area (or 3x3 area) from that side. Each skyscraper clue indicates how many skyscrapers are visible from that side.

Enter the digits in the marked rows.



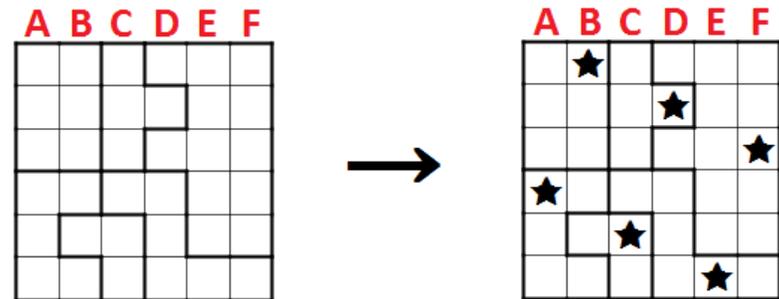
Answer Key: 345621, 562143

### D1. Star Battle 50 pt

Place 1 star in every row, column and boldly marked area. Stars are not allowed to touch each other, not even diagonally.

Note: The puzzle in the contest will have 2 stars in every row, column and boldly marked area.

Enter the letters of the columns in which the first stars come in each row, top to bottom.



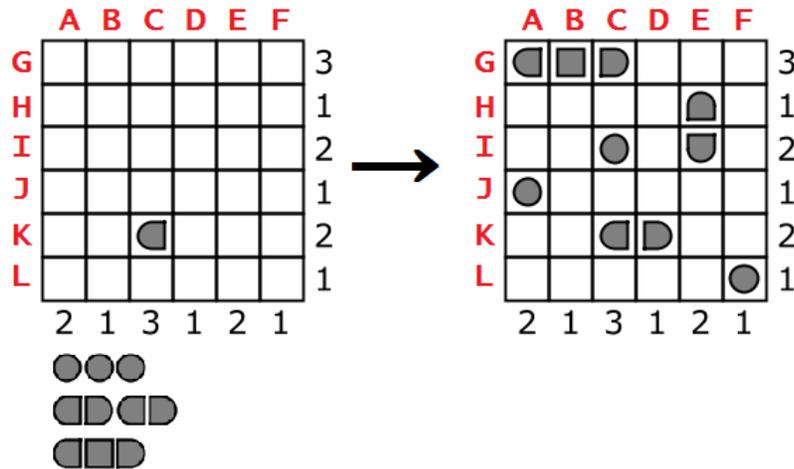
Answer Key: BDFACE

## D2. Battleship

60 pt

Locate the given fleet in the grid. Ships don't touch each other, not even diagonally. The numbers next to and below the grid tell how many parts of ships there are in that particular row or column. Parts of certain ships have been given. Squares with water don't contain ship parts.

Give the coordinates of the one-cell ships in alphabetical order.



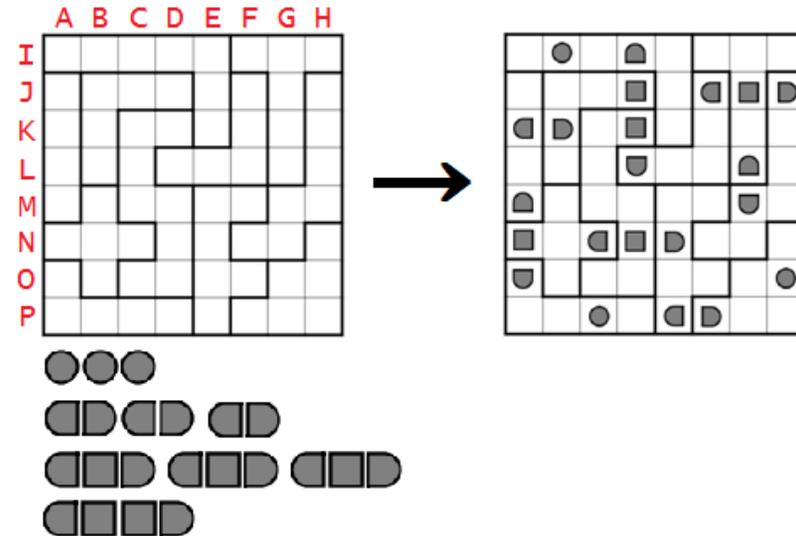
Answer Key: AJ, CI, FL

## D3/4. Sea Battle

30/70 pt

Place the given fleet in the grid so that in every row, column and boldly marked area exactly 2 ships appear. Ships don't touch each other, not even diagonally. Ships may cross over bold lines.

Enter the rows and/or columns where the size 2 and 3 ships lie.



Answer Key: GKP, AJN

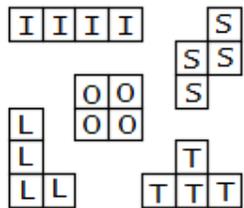
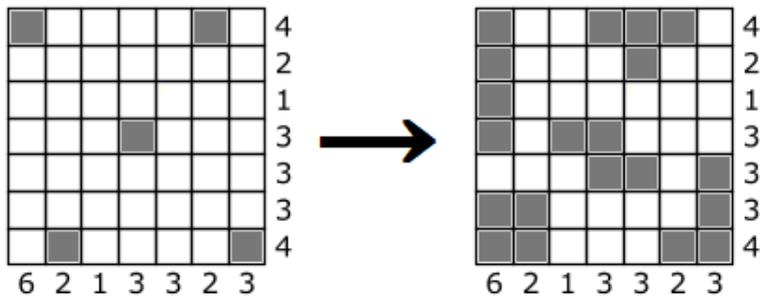
## E1. Penta

50 pt

Place the shown polyominos in the grid. The pieces can't touch each other, not even diagonally. The pieces can be rotated and/or reflected. The numbers next to and below the puzzle indicate how many squares in those rows and columns are occupied by the pieces. 2 squares are already given of each polyomino.

*Note: The puzzle in the contest will have pentominos – hence the name 'penta'.*

*Enter the order of the pentas you encounter by their letter going from left to right, top to bottom.*



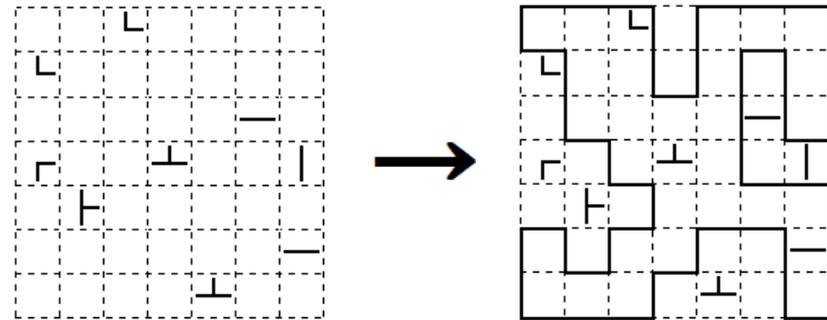
Answer Key: ITSLO

## E2. Myopia

70 pt

Draw a closed loop over the grid lines. The lines in the grid indicate in what direction(s) the loop is closest when looking from that square.

*Enter the number of cells outside the loop for each row.*



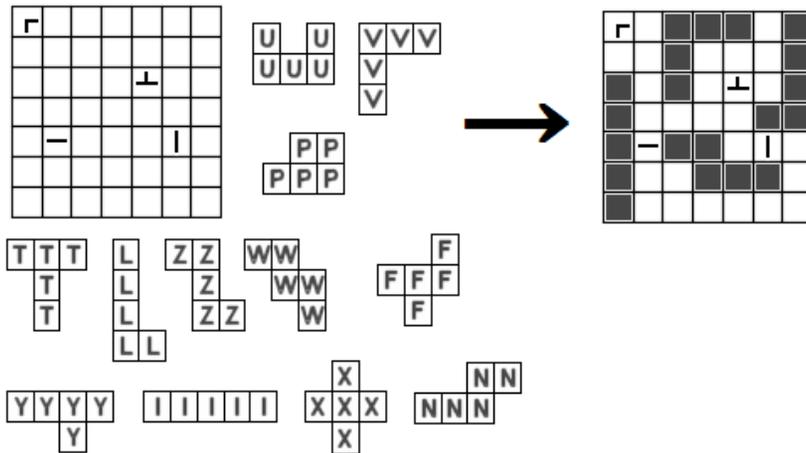
Answer Key: 1324333

### E3/4. Pentopia

30/70 pt

Place a number of different pentas in the grid; not all of them have to be placed. The pieces can't touch, not even diagonally. The pieces may be rotated and/or reflected. The lines in the grid indicate in what direction(s) the closest pentas are when looking from that square. Squares with arrows can't contain pentas.

Enter the order of the pentas you encounter by their letter going from left to right, top to bottom.



Answer Key: VLIN

### X1. Dice

30 pt

You have a set of 3 dice with 18 different letters on them. You are given a set of words that are rolled with those 3 dice. Determine the orientation of the 3 dice.

\*Note: The puzzle in the contest will have 4 dice and 24 letters.

Enter the dice with A and E in alphabetical order.  
Non-alphabetical order won't be counted wrong, but will help the automated scoring.

- AND
- BED
- CAR
- CUT
- DOG
- FIB
- FOX
- GYM
- PEA
- RIM
- SUN
- TIP
- YES



Die 1	Die 2	Die 3
A	C	D
B	E	F
M	G	P
O	I	R
S	N	U
T	X	Y

Answer Key: ABMOST, CEGINX

**X2. ABC****120 pt**

All letters in the alphabet have been given a different value from 1-26. The numbers behind each word give the sum of the values of the letters in the word. Determine the values of the letters.

*Enter the value of A-J in alphabetical order, separated by commas.*

BACK...74    DROP...65    LOST...50    TRAY...70  
 BIDS...27    FUME...55    MUST...50    TUTU...50  
 BIKE...52    GLUE...50    QUIZ...40    VINE...30  
 BOLD...50    HARM...70    SOUL...55    WIFE...50  
 CAST...60    JOKE...69    SWIM...52    ZONE...45



A	B	C	D	E	F	G	H	I	J	K	L	M
24	12	18	6	19	4	5	16	1	9	20	11	17
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
3	21	25	22	13	8	10	15	7	26	14	23	2

Answer Key: 24,12,18,6,19,4,5,16,1,9

**X3/4. Alphanumeric Dice****60/90 pt**

You have a set of dice with letters and digits on them. Each die has the numbers 1-6 once, and no letter appears more than once on any of the dice. You are given a set of words that are rolled with those dice and the sum of the digits rolled with those words. Determine the orientation of the dice.

*Enter the letters of the dice with C and O in numerical order.*

*Entering the letters in non-numerical order will be considered incorrect.*

ANT 11    FOX 12  
 BIG 13    GYM 11  
 BUN 13    NOD 5  
 CAR 7    ORE 8  
 FLY 13    YES 6



Digit	Die 1	Die 2	Die 3
1	S	C	D
2	O	N	Y
3	A	E	R
4	G	I	X
5	L	M	B
6	U	F	T

Answer Key: CNEIMF, SOAGLU