<table>
<tr><td><strong>Part III</strong></td><td><strong>Name</strong></td></tr>
</table>

**Full House – 20 points**
**Name Paths – 40 points**
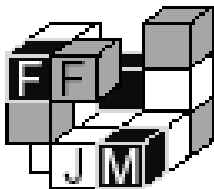**L-Triominoe Loop – 20 points**
**Torus Domino Hunt – 10 points**
**Paint Magnets – 20 points**
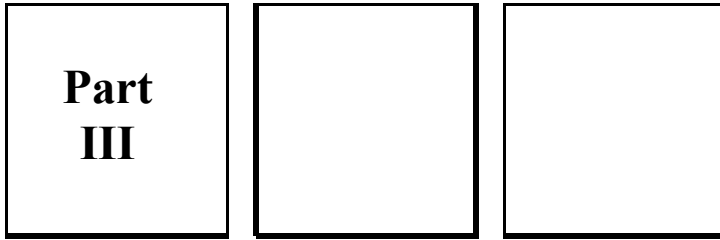**Disconnected Polyominoe Minesweeper – 40 points**
**Zeros – 10 points**
**Squares Balancing Act – 10 points**
**Magic Y-Pentominoe – 15 points**
**Digits Display – 15 points**

## 3.1 Full House – 20 points

Find the starting square S and draw a path moving horizontally or vertically that passes through every open square exactly once until the finish square F. For every straight segment in the path, you must go as far as possible, changing direction only when you are blocked by the grid's edge, a black square or a square already visited.
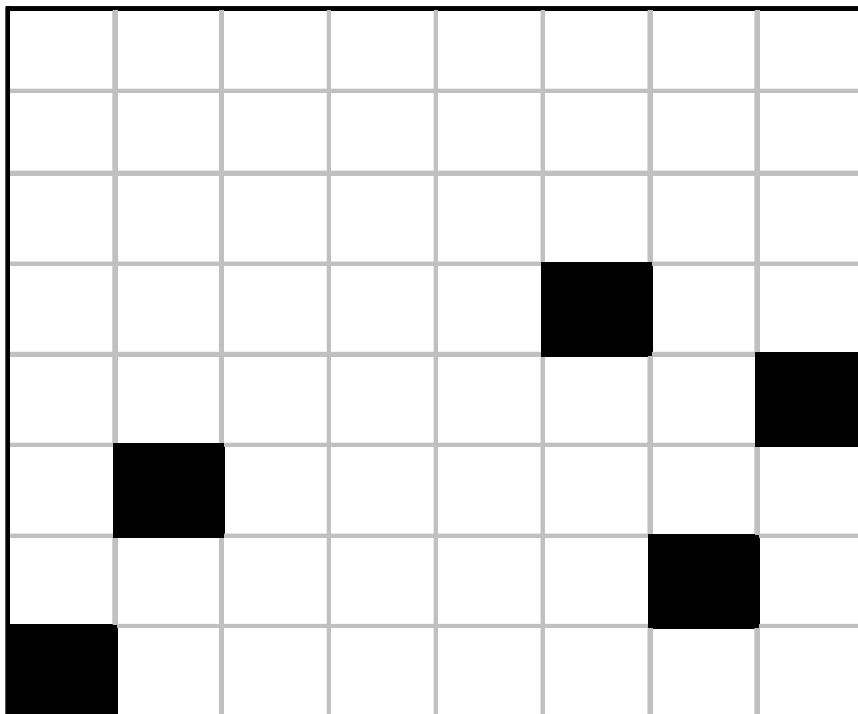
## 3.2 Name Paths – 40 points

The list contains the first names of 12 puzzlers. Every name must be placed into the grid with a letter per cell along a continuous path moving horizontally or vertically. The given encircled letters must be either the beginning or the end of a name. The paths will cover every single cell of the grid.
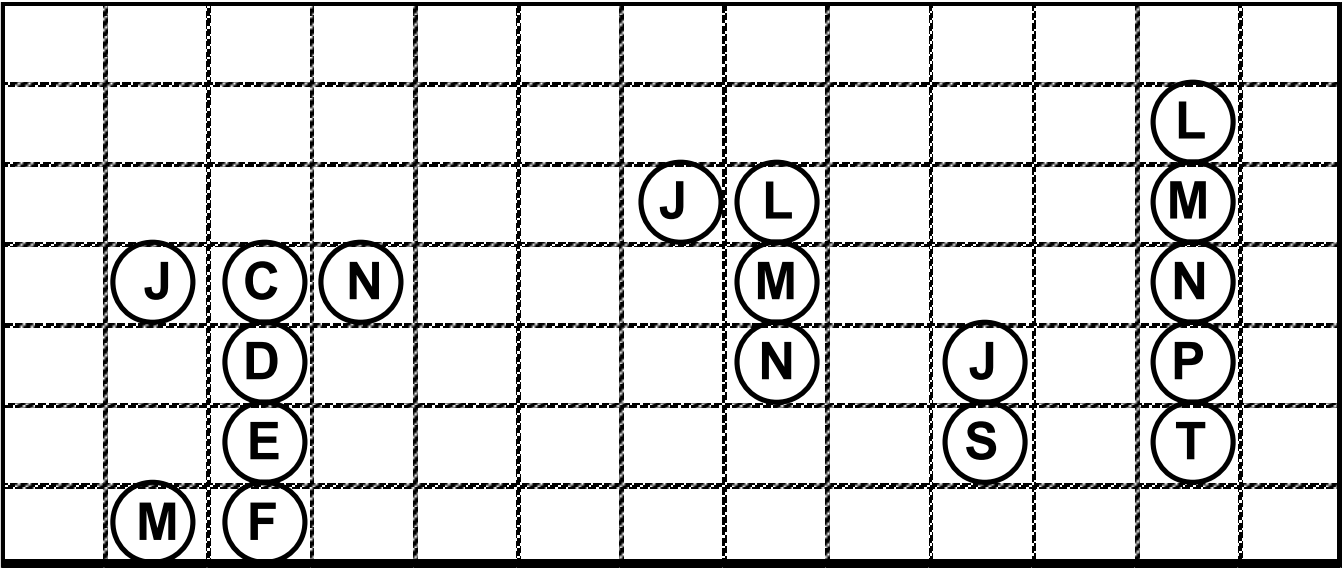


| C | H | R | I | S | T | I | A | N | | | | | |
| D | E | N | I | S | | | | | | | | | |
| F | R | A | N | C | O | I | S | | | | | | |
| J | E | A | N | C | H | R | I | S | T | O | P | H | E |
| J | E | A | N | L | O | U | I | S | | | | | |
| J | U | L | I | E | N | | | | | | | | |
| L | A | U | R | E | N | T | | | | | | | |
| M | A | R | I | E | | | | | | | | | |
| M | A | R | T | I | A | L | | | | | | | |
| M | I | C | H | E | L | | | | | | | | |
| P | I | E | R | R | E | | | | | | | | |
| S | E | B | A | S | T | I | E | N | | | | | |
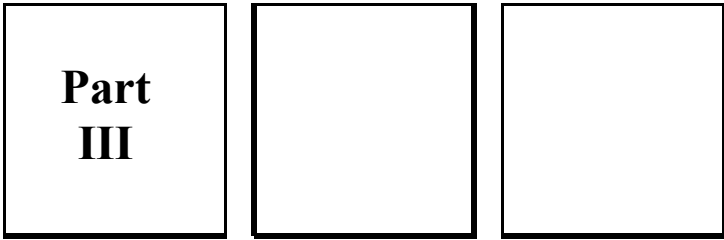
## 3.3 L-Triominoe Loop – 20 points

Divide the grid into L-triominoes and draw a single continuous loop running horizontally or vertically covering every single cell. In every L-triominoe, the line must enter, take a 90° turn in the corner and exit once. Some L-triominoes are given.
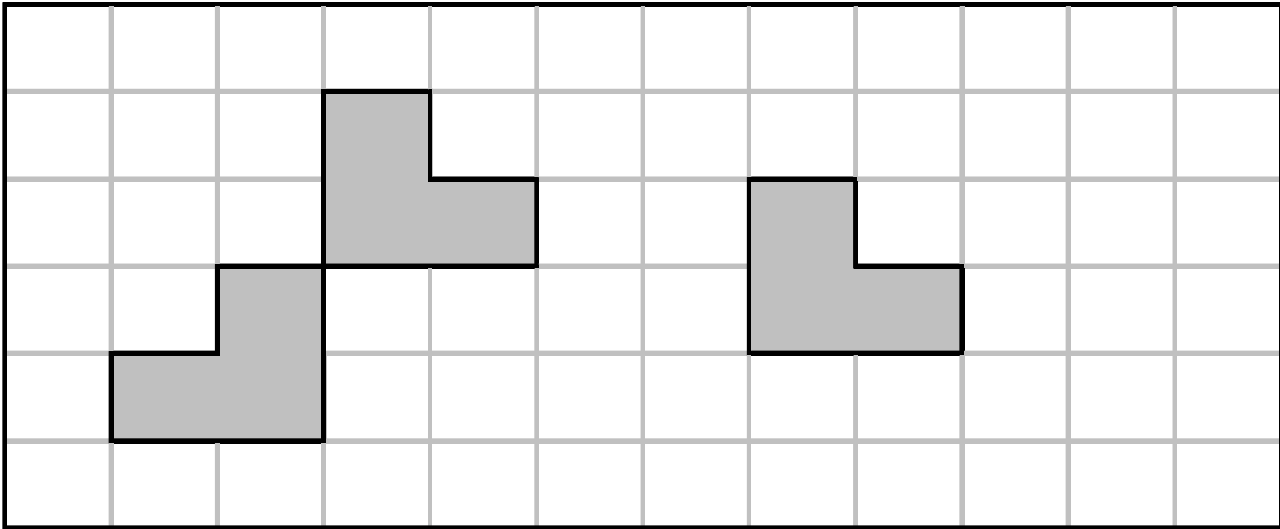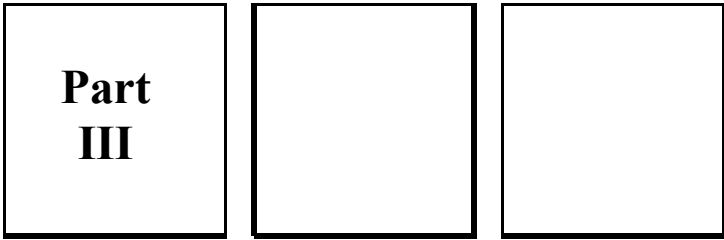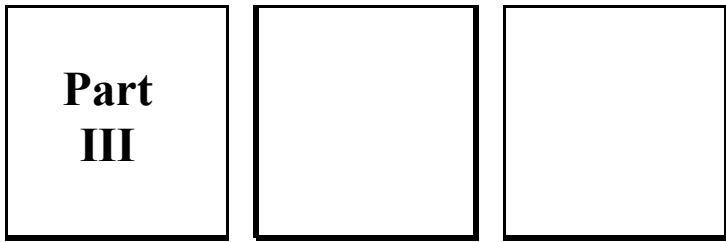
## 3.4 Torus Domino Hunt – 10 points

A 28 dominos set from 0-0 to 6-6 has been placed into the grid. If the boundaries had the open configuration of a torus and the edges wrapped, then every digit from 0 to 6 would be connected in group as shown by the diagram. Draw the sides of the dominos into the grid.
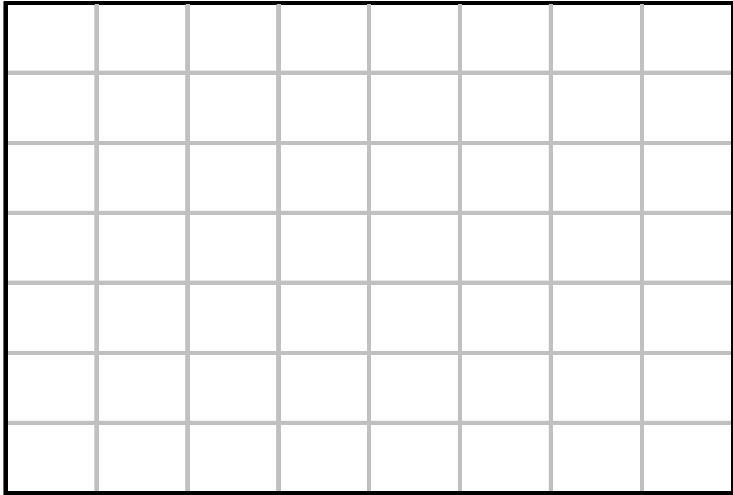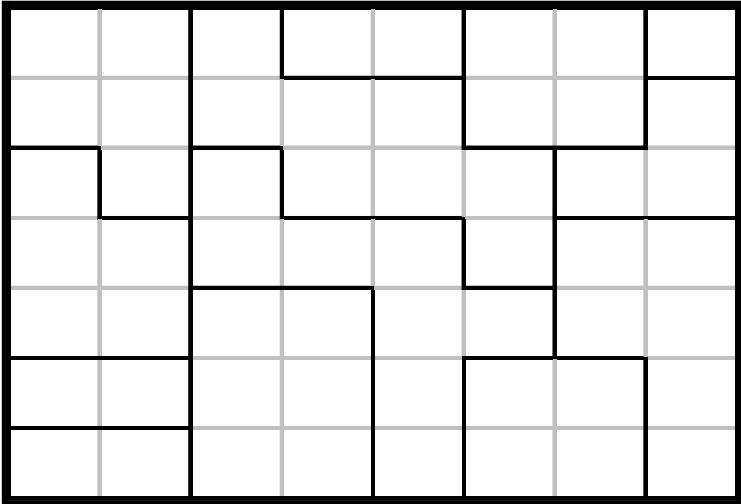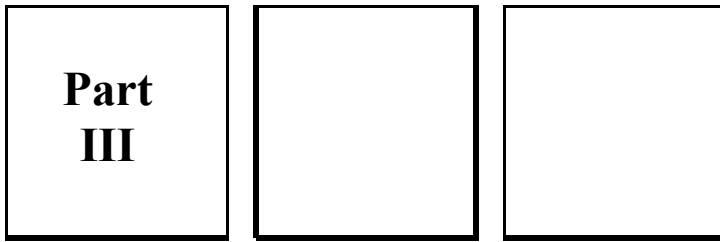
## 3.5  Paint Magnets – 20 points

Locate magnetic and non-magnetic plates into the grid. Each magnetic plate has two halves with opposite polarities, positive (+) and negative (-). When two magnetic plates touch each other on edge, the adjacent halves must have opposite polarities. Each non-magnetic plate has two halves without any polarity and can appear everywhere. The numbers below the grid indicate the respective numbers of positive and negative polarities in that column. The numbers at the left of the grid indicate how many groups of polarities there are in that row and, in order, how many consecutive ones there are in each group.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 3 | | | | | | | | | |
| 2 | 1 | | | | | | | | | |
| 3 | 2 | | | | | | | | | |
| 3 | 1 | | | | | | | | | |
| 2 | 2 | | | | | | | | | |
| 2 | 3 | | | | | | | | | |
| 4 | 1 | | | | | | | | | |
| 2 | 4 | | | | | | | | | |
| | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 3 | + |
| | | 0 | 3 | 4 | 2 | 2 | 2 | 3 | 3 | - |

## 3.6 Disconnected Polyominoe Minesweeper – 40 points

A one-dimensional disconnected polyominoe, collection of lattice squares in a line, is shown by the diagram. Copies of the same polyominoe tile the rectangle as shown. Some of them contain a mine and must be blackened. Every digit shows the number of mines in the laterally neighboring polyominoes, including the one with the digit. These polyominoes must have, along the edge of one square or rectangular block, one segment of one unit in common. The up left corner square is not blackened. One blackened polyominoe is given.
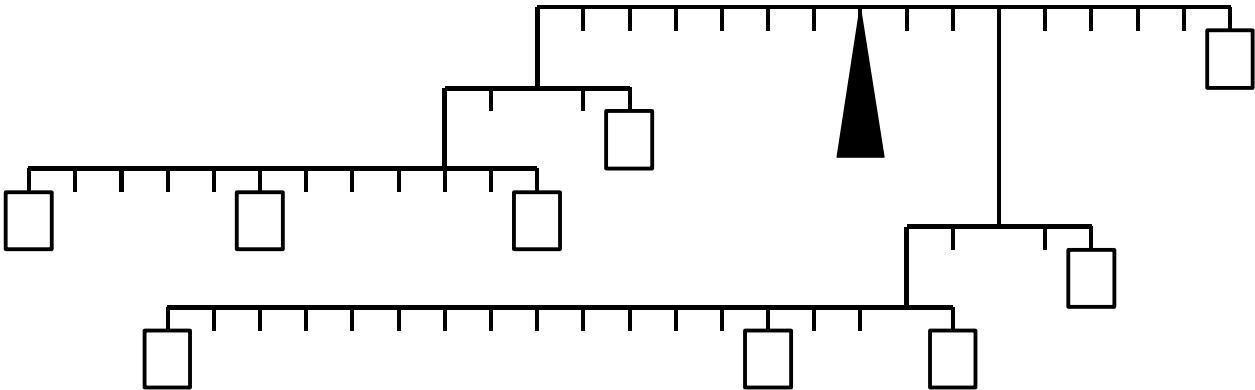
## 3.7 Zeros – 10 points

Enter digits from 1 to 4 into every row and every column of the grid once. Then add some zeros to the right of some of the digits. Totals of the numbers are given for every row and every column.

| | | | | |
|---|---|---|---|---|
| **424** | | | | |
| **415** | | | | |
| **370** | | | | |
| **244** | | | | |
| | **136** | **343** | **460** | **514** |

## 3.8   Squares Balancing Act – 10 points

From 1 to 9, the mass N weights $N^2$. The horizontal rods indicate there is equal torque on both sides. The torque of every mass is its weight times its distance from the fulcrum. Assume the strings and rods have negligible weight.

## 3.9  Magic Y-Pentominoe – 15 points

Fill digits from 1 to 5 into the grid in such a way that every digit appears once in every Y-pentominoe, once in every column and twice in every row. Cells with the same digit do not touch each other horizontally, vertically nor diagonally. Some digits are given.

## 3.10  Digits Display – 15 points

Digits are in digital form up to seven segments as shown by the diagram. Fill the digits from 0 to 9 once in every rectangle, blackening some of the segments, in such a way that every number on a connecting line indicates how many black segments the two connected digits have in common.