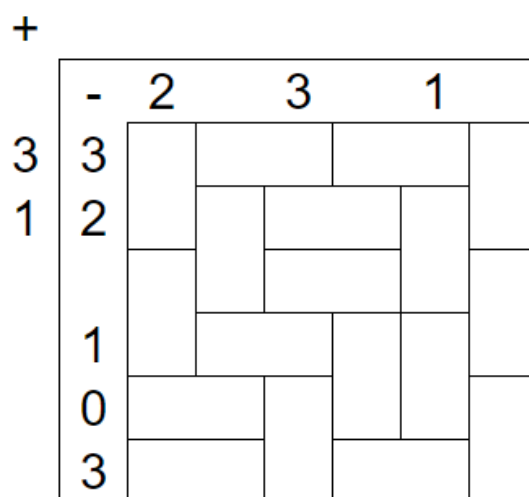


Magnets is a puzzle type which I enjoy partly because it can use some quite different logic.

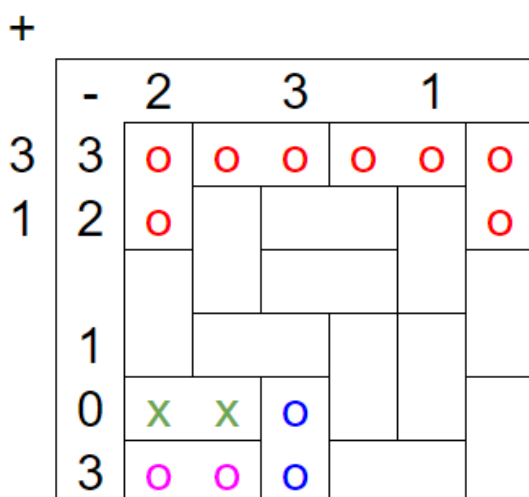
Bram de Laat gives the following rules on his blog.

The grid is divided into domino regions. Place some magnets into these regions. Each magnet consists of a + pole and a - pole. Equal poles aren't allowed to touch by a side. The numbers on the outside indicate how many of each symbol are located in that row or column.

We'll work through an example puzzle to show some of the logic.



Good starting points tend to be clues which are half the size of the grid (in this case 3) or 0 clues. The 3 and 3 clue at the top shows the whole row must be used (but we don't immediately know which way around, so I tend to fill in with circles while I wait to learn). Notice that both halves of the domino must be used. The blue domino must be used, or there isn't enough space to fit 3 – signs in this column, and similarly the pink domino for that row. The green domino must not be used as it would have a + and a – in some order and we don't want any – signs.



The blue domino can only go one way around to avoid putting a – in this row, which also places any adjacent dominoes to avoid same signs touching. We can also avoid the red domino at the top, as that would place 4 symbols in the row and we have a maximum of 3.

+

|   | - | 2   | 3   | 1   |
|---|---|-----|-----|-----|
| 3 | 3 | o   | o o | o o |
| 1 | 2 | o   | x x | o   |
|   | 1 |     |     |     |
|   | 0 | x x | +   |     |
|   | 3 | - + | -   |     |

This red domino at the top means that we can place a – in the column needing 3 (marked blue below) which sets all of our symbols in the top dominoes. Further, since we can't have any – signs in row 5, the domino next to the + must be empty.

+

|   | - | 2   | 3   | 1   |
|---|---|-----|-----|-----|
| 3 | 3 | -   | + - | + - |
| 1 | 2 | +   | x x | -   |
|   | 1 |     | x   |     |
|   | 0 | x x | +   | x   |
|   | 3 | - + | -   |     |

The 1 column now cannot have any more – signs in, so cannot have the vertical dominoes, and the horizontal domino would place the – in this column, so must also be empty. The 2 column is also full of – signs, so cannot have the extra vertical domino.

|   |   |         |   |   |   |   |   |
|---|---|---------|---|---|---|---|---|
|   |   | +       |   |   |   |   |   |
|   |   | - 2 3 1 |   |   |   |   |   |
| 3 | 3 | -       | + | - | + | - | + |
| 1 | 2 | +       |   | X | X | X | - |
|   |   | X       |   |   |   | X |   |
| 1 | 1 | X       |   |   | X | X |   |
| 0 | 0 | X       | X | + | X | X |   |
| 3 | 3 | -       | + | - | X | X |   |

We can fill up the row clues for rows 2 and 6.

|   |   |         |   |   |   |   |   |
|---|---|---------|---|---|---|---|---|
|   |   | +       |   |   |   |   |   |
|   |   | - 2 3 1 |   |   |   |   |   |
| 3 | 3 | -       | + | - | + | - | + |
| 1 | 2 | +       | - | X | X | X | - |
|   |   | X       | + |   |   | X |   |
| 1 | 1 | X       |   |   | X | X |   |
| 0 | 0 | X       | X | + | X | X | + |
| 3 | 3 | -       | + | - | X | X | - |

The red domino below cannot be placed because both ends are next to a + sign, so neither end can have the + sign. This kind of exclusion happens in Magnets puzzles quite frequently. You can also have exclusions where an individual cell (not domino) is flanked by a + on one side and – on another side, so it cannot be either symbol and must be empty.

|   |   |         |   |   |   |   |   |
|---|---|---------|---|---|---|---|---|
|   |   | +       |   |   |   |   |   |
|   |   | - 2 3 1 |   |   |   |   |   |
| 3 | 3 | -       | + | - | + | - | + |
| 1 | 2 | +       | - | X | X | X | - |
|   |   | X       | + |   |   | X |   |
| 1 | 1 | X       | X | X | X | X |   |
| 0 | 0 | X       | X | + | X | X | + |
| 3 | 3 | -       | + | - | X | X | - |

The remaining dominoes must be full to meet the column and row conditions.

+

|   |   |   |   |   |   |   |   |  |
|---|---|---|---|---|---|---|---|--|
|   |   | - | 2 |   | 3 |   | 1 |  |
| 3 | 3 | - | + | - | + | - | + |  |
| 1 | 2 | + | - | X | X | X | - |  |
|   |   | X | + | - | + | X | + |  |
|   | 1 | X | X | X | X | X | - |  |
|   | 0 | X | X | + | X | X | + |  |
|   | 3 | - | + | - | X | X | - |  |