## 2022/11/14-19

## WEEK 45

# SPIRAL GALAXIES AND KUROMASU 

JinHoo Ahn Kuromasu<br>Thomas Snyder Spiral Galaxies<br>Sam Cappleman-Lynes Kuromasu<br>Salih Alan Kuromasu<br>Murat Can Tonta Spiral Galaxies<br>Grant Fikes Spiral Galaxies

GRANDMASTER PUZZLES


## Kuromasu by JinHoo Ahn

Rules: Shade some empty cells black so that each number indicates the total count of white cells connected vertically and horizontally to that number including the numbered cell itself. Black cells cannot share an edge, and all white cells must belong to a single connected group.

|  | $(2)$ | 6 |  |  |  | 3 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 3 |  |  | 5 |  |  | 4 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 2 |  |  |  | 7 | 4 |  |



Multiples of 3

## Spiral Galaxies by Thomas Snyder

Rules: Divide the grid along the indicated lines into connected regions - "galaxies" - with rotational symmetry. Each cell must belong to one galaxy, and each galaxy must have exactly one circle at its center of rotational symmetry.


Think Inside the Box

## Kuromasu by Sam Cappleman-Lynes

Rules: Shade some empty cells black so that each number indicates the total count of white cells connected vertically and horizontally to that number including the numbered cell itself. Black cells cannot share an edge, and all white cells must belong to a single connected group.

|  | $(2)$ | 6 |  |  |  | 3 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 3 |  |  | 5 |  |  | 4 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 2 |  |  |  | 7 | 4 |  |



Twins

## Kuromasu by Salih Alan

Rules: Shade some empty cells black so that each number indicates the total count of white cells connected vertically and horizontally to that number including the numbered cell itself. Black cells cannot share an edge, and all white cells must belong to a single connected group.

|  | $(2)$ | 6 |  |  |  | 3 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 3 |  |  | 5 |  |  | 4 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 2 |  |  |  | 7 | 4 |  |



|  |  | 4 | 4 |  |  | 5 |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | 4 | 4 |  | 5 | 5 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  | 4 |
|  |  |  |  | 5 |  |  |  | 4 |  |
|  |  | 4 |  |  | 4 |  |  | 4 |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | 5 |  |  |  | 5 | 5 |
| 4 |  |  |  |  |  |  |  | 5 |  |
|  | 5 |  |  |  |  | 5 |  |  |  |

Antisymmetry

## Spiral Galaxies by Murat Can Tonta

Rules: Divide the grid along the indicated lines into connected regions - "galaxies" - with rotational symmetry. Each cell must belong to one galaxy, and each galaxy must have exactly one circle at its center of rotational symmetry.


Hidden

## Spiral Galaxies by Grant Fikes

Rules: Divide the grid along the indicated lines into connected regions - "galaxies" - with rotational symmetry. Each cell must belong to one galaxy, and each galaxy must have exactly one circle at its center of rotational symmetry.


