In this introductory lesson, students will use the Rubik’s® Mini in order to gain a basic understanding of symmetry in a figure.

**Common Core Standards:**

**Geometry**

CCSS.MATH.CONTENT.4.G.A.3
Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

**Objectives:**

Using the colors and faces on a Rubik’s Mini, students will explore and create designs that exhibit symmetry.

**Materials:**

- Rubik’s Mini cubes (one per student or pair of students)
- grid paper (teacher choice of size - differentiate)
- pencil
- ruler
- yarn or string (optional)

**Procedure:**

**Before class:**

Safety: Clean all Rubik’s Minis with sanitizing wipes.

**With students:**

1. Introduce/discuss symmetry with students. Provide examples and pictures of things that exhibit symmetry. Ask students to identify the line of symmetry. Ask students to identify objects in the classroom that might exhibit symmetry.

2. Using a sheet of grid paper, draw a line in the middle in order to represent the line of symmetry. (Materials option: A piece of yarn or string might also be used to represent a line of symmetry).
3. Using a minimum of two Rubik’s Minis, ask students to place the cubes on each side of the line of symmetry on the paper so that they exhibit symmetry (teacher check). Discuss the figure as a whole and its components. Students may turn the faces of the cube in order to complete this task. Example:

![Example Image]

4. Challenge students to use the same two cubes and colors and create symmetry a different way (ex. rotate) (teacher check).

5. Using a total of 4 cubes, create a new figure with symmetrical design.

**Extension 1:** Challenge students to see how many different symmetrical figures they can create with a certain number of cubes and/or colors.

**Extension 2:** Using a ruler and grid paper, design and draw a symmetrical figure that uses Rubik’s Minis. Be creative with color, shape, patterns, etc. Include the line of symmetry (label) as well as the number of cubes that your figure would require. Color.

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