



# Art & Geometry Lesson



## National Standards

**Instructional programs for Geometry in grades 6th-8th should enable all students to:**

*Recognize and apply geometric ideas and relationships in areas outside the mathematics classroom, such as art, science, and everyday life.*

## Common Core State Standards

### **6.RP: Ratios and Proportional Relationships**

*Understand ratio concepts and use ratio reasoning to solve problems.*

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

### **6.G: Geometry**

*Solve real-world and mathematical problems involving area, surface area, and volume.*

4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

### **Reading Standards for Literacy in Science and Technical Subjects 6-12**

*Key Ideas and Details (Grades 6-8 students)*

3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

*Craft and Structure (Grades 6-8 students)*

4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

## 21<sup>st</sup> Century Skills

### Learning and Innovation Skills

- Critical Thinking and Problem Solving
  - Exercising sound reasoning in understanding
  - Understanding the interconnections among systems
  - Identifying and asking significant questions that clarify various points of view and lead to better solutions
  - Framing, analyzing and synthesizing information in order to solve problems and answer questions
- Creativity and Innovation
  - Acting on creative ideas to make a tangible and useful contribution to the domain in which the innovation occurs

### Life and Career Skills

- Initiative & Self-Direction
  - Defining, prioritizing and completing tasks without direct oversight
  - Utilizing time efficiently and managing workload
- Leadership & Responsibility
  - Using interpersonal and problem-solving skills to influence and guide others toward a goal.

## Objective

In this activity students will create 1:1 scale models of a Rubik's Cube and redesign the colors on the cubes.

- Geometry: create scale models of similar figures using ratio, proportion with pencil/ paper and determine scale factor
- Art: create three-dimensional artworks using a variety of elements of art and principles of design

## Materials

Rubik's Cubes

Card stock

Rulers

Various art supplies available for students to chose from (magazines, paint, markers, glue, scissors, glitter, construction paper, beads, etc.)

## Procedure

1. Begin by asking students to create a scale model of a Rubik's Cube.
2. Students should have prior knowledge of 1:1 ratios and scale drawings.
3. They will create the Rubik's Cube model using a hexominoe net (they create) on the card stock, cutting it out, and gluing it together. \*\*\*Forming the Rubik's Cube, by folding and gluing, should be the LAST step in this activity.\*\*\*
4. Students should use their ruler to draw the nine smaller cubes on each side of the large Rubik's Cube.
5. Show students different examples of "designer" Rubik's Cubes. These pictures can be found on the internet by searching for images under key words, "Rubik's Cube". This will give students an idea of what they can do to turn their Rubik's Cube into an original work of art!
6. Give students time to be as creative as possible. Remind them they do not have to stick with the original colors!
7. Their final product should resemble a solved Rubik's Cube.

## Notes to Teacher

See the lesson on Polyhedron Nets for more ideas on exploring polyhedron nets and creating the hexominoe nets