



**BRANDYWINE  
RIVER MUSEUM  
OF ART**

## **Symmetry: Math and Visual Arts**

### **Objectives:**

1. Learn the difference between reflective and rotational symmetry
2. Observe the use of symmetry in works of art
3. Complete a symmetrical picture

**Grade Level:** Upper Elementary and Middle School

### **Common Core Academic Standard:**

- 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.

### **Suggested Images:**

- *Frolic*; Jamie Wyeth; 2016
- *Hepaticas*; Henriette Wyeth; 1966

**Introduction:** Objects with symmetry have correspondence in size, shape, and relative position of parts on opposite sides of a dividing line or median plane or about a center or axis. The two main types of symmetry are reflective and rotational. In reflective symmetry one half of an object is the mirror image of the other half, such as a butterfly's wings. In rotational symmetry the object can be turned around a central point and match elements multiple times, an example being a starfish. Sometimes artists will include symmetrical objects in their works to create a balanced composition.

**Discover:** Look at the portrait of George A. Weymouth titled after his nickname "Frolic" painted by artist Jamie Wyeth. Imagine a line being drawn vertically through the figure of Frolic or the horse on the left-hand side of the painting. On either side of this imaginary line is a mirror image of the opposite side. This is an example of reflective symmetry. Now look at the tiny flowers in Henriette Wyeth's *Hepaticas*. Around the center point of each flower are six equal petals. This is an example of rotational symmetry. Both paintings have a balanced composition. In *Frolic*, balance is achieved by having the with a horse on either side. By having things slightly off center gives more energy to the painting. In *Hepaticas*, the flowers are located all around the canvas in a way that allows the viewer's eyes to move around the entire painting. This makes the painting seem calm and balanced.

**Create:** A watercolor pencil drawing of a symmetrical natural object.

**Materials:**

- Images of symmetrical flowers, leaves, pinecones, butterflies, etc.
- Pencils
- Watercolor pencils
- Water cups
- Brushes
- Scissors
- Glue
- Watercolor paper

**Assignment:**

1. Students will choose an image and then cut the image so that the natural object being shown is split evenly in half.
2. Glue one half of the picture to the water color paper.
3. Using pencils and watercolor pencils, students will use the half of the picture that they glued down as a guide to draw the missing half of the natural object.

