Lesson Plan: Color Combinations
Provided by the Art Institute of Chicago Department of Museum Education

Suggested Grade Level: 7-8
Estimated Time: One to two class periods

Introduction
By exploring and practicing the Pointillist technique used by Georges Seurat to paint *A Sunday on La Grande Jatte—1884*, students are introduced to color mixing and the science of color perception.

Lesson Objectives
• Develop a basic understanding of how color is perceived by the eye
• Discover how combinations of primary colors create secondary colors

Key Terms
• Pointillism
• spectrum
• primary colors
• secondary colors
• interaction
• Ben-Day process

Instructional Materials
• Cotton swabs
• Red, yellow, and blue tempera paints in jar lids
• Photocopies of an empty color wheel (a circle divided into six equal sections)
• Strong magnifying glasses
• Newspaper comics
• White drawing paper
Procedures

Discussion:

• Examine Georges Seurat’s *A Sunday on La Grande Jatte–1884* with students on the Web. Explain that Seurat studied color, light, and form based on the most advanced information about color and visual perception. He placed pure colors side by side by applying tiny strokes, dots, and dashes to the surface of the canvas. When seen from a distance, the tiny strokes blend in the eye and are perceived as secondary colors. This technique has become known as Pointillism.

• Using the computer, experiment with both close-up and distant points-of-view. Have students zoom in on the painting and record which colors are placed next to each other on various parts of the canvas. As students zoom away from the painting, ask them to identify the point at which colors seem to blend together. Ask students:
  o What new colors are created by this optical mixing?

• Explain that color is a phenomenon of light. As light strikes objects, those objects reflect some of that light back to our eyes. Have students paint an area of their color wheel with yellow tempera paint. Explain how light travels to the eye:
  o When light strikes the yellow paint, all of the colors of the rainbow shine on it, but yellow is the only one we see. This is because the yellow wavelengths of light are reflected from the paint back to our eyes.
  o Color receptors in our eyes then send a message of "yellow" to the brain. The other wavelengths are mostly absorbed by the paint.
  o Visible light is made up of the colors of the rainbow: red, orange, yellow, green, blue, indigo, and violet. This rainbow of colors is called the spectrum. We see white when all colors are reflected from a surface and black when all colors are absorbed.

• Lead students to complete the palette of hues on their color wheels. Begin by asking students to brush blue and red correctly on the color wheel.

• Explain that red, blue, and yellow are called primary colors because they are the basis for all other colors. Orange, green, and purple are called secondary colors because they are created by mixing pairs of primary colors. Have students mix equal amounts of each of the primary colors to form secondary colors on the color wheel.

• Explain that when artists combine two colors of paint, such as blue and yellow, the particles of the two colors interact to form a mixture. The green color is a mixture of the frequencies of visible light reflected by the blue and yellow paint together.

• Ask students to look at Seurat’s painting again. Discuss how the dots interact to form new colors.

• To make the point with another example, show students the comics page of a newspaper. Have students examine the comics with a magnifying glass. Explain that these are made using the Ben-Day process. Although only four colors are used (the primaries and black), the naked eye sees the effect of secondary colors in the combination of tiny dots.
**Activity:**
Encourage students to create a Pointillist picture by dipping cotton swabs in the lids filled with tempera paint and making many tiny dots and dabs to produce a picture. Encourage them to try producing secondary colors by placing dots of primary colors near or on top of one another.

**Evaluation**
Base students’ evaluation on their participation in class discussion and comprehension of color perception.

**Glossary**

**Ben-Day process** (*n*)
named for New York printer Benjamin Day (1838-1916), a process for adding tone or shading by overlaying patterns, usually dots, onto the plate; used in printing comic strips

**optical** (*adj*)
of or pertaining to sight or vision; visual

**palette** (*n*)
the range of colors used by a particular artist or in a particular work

**Pointillism** (*n*)
a theory and technique of applying small strokes or dots of color to a surface so that from a distance, they blend together; also called Neoimpressionism or Divisionism

**Illinois Learning Standards**
Science: 11, 12
Fine Arts: 25, 26