

STEAM: Science, Technology, Engineering, Art, and Math 2025-2026 School Year

Grades: K-5

Lesson Overview

Students will explore creative problem solving and experimentation through the creative artistic processes displayed within works of art in the High's collection.

Learning Objectives

Essential Questions

- How can students create a mixed-media work of art that incorporates diffusion, textures, and mathematic equations?
- How do artists experiment with various materials within the creative process?

Students will be able to . . .

- Experiment with cause and effect by observing how materials (crayon, marker, water, and printing ink) behave differently when combined, overlapped, or layered.
- Explore how layering textures, colors, and prints can create a unified composition.
- Create connections between scientific concepts and art-making processes.

Performance Tasks

- Discussion-based observation
- Art-making exploration

Vocabulary

- Absorb
- Cause and effect
- Diffusion
- Equation
- Experiment
- Layering
- Overlapping
- Repetition
- Symmetry
- Texture

Materials

- 9" x 12" white tagboard
- 9" x 12" colorful cardstock, cut to 3" x 4"
- Pencils
- Colored pencils
- Markers
- Crayons
- Construction paper
- Glue sticks
- Various textures (texture plates, leaves, coins, cardboard)
- Washable markers
- Small cups of water
- Water droppers
- Paper towels

- Foam sheets (or recycled cardboard)
- Popsicle sticks (or pencils for etching)
- Stamp pads
- Rulers
- Visual timer
- Images of works of art from the High's collection

High Museum of Art Collection Connection

- [Renee Stout, We Were Laughing on the Sun Porch](#)
- [Vincencia Blount, Buttercups](#)
- [Nabil Nahas, Peekaboo](#)
- [Howard Finster, Howard on a Mule](#)
- [Robert Rauschenberg, Overcast III](#)

Procedure

Introduction and Project Logistics (10 minutes)

Ask students to name examples of how artists experiment with materials. Explain to students that they will also experiment with materials. With one sheet of white tagboard, students will rotate through three art-making + STEAM stations to explore cause and effect. After going through all stations, each student's work of art should show layers of textures, colors, and shapes that record their discoveries.

Students will have approximately **ten minutes** per station. Allow **two minutes** for students to transition to the next station. Adjust time as needed and utilize a visual timer to indicate remaining work time.

Art Making

Station 1: Texture Explorers (Art and Engineering) (10 minutes)

Students should place construction paper on top of textured plates and use the side of a crayon to create various textures. Show students how they can explore overlapping textures and how layering can change their work.

Directions to Students

1. Place your paper on top of a textured surface (texture plates, leaf, coin, etc.).
2. Rub with the side of a crayon to reveal the texture.
3. Layer and overlap two different textures on your paper.

STEAM Connections

- Science/Engineering: Engineers and scientists study textures to see how surfaces behave (rough vs. smooth, bumpy vs. flat). Texture helps us understand how things are built and how they work.
- Art: Layering and overlapping creates depth and interest in a composition.

Grade-Level Modifications

- K-1: Identify textures as *bumpy, smooth, rough*. How many different textures can they collect?
- 2-3: Compare textures: Which one is the roughest? Which one overlaps the most?
- 4-5: Challenge students to create a composition with balanced positive/negative space or various textures in patterns.

Station 2: Color Scientists (Art and Science) (10 minutes)

Students will use washable markers to make bold patches of color on their paper. Then they will drop or spray water on top of the colors to watch them spread and blend.

Directions to Students

1. Use markers to make colorful dots or shapes on your paper.
2. Add a few drops of water on top of the colors using a water dropper.
3. Watch what happens as the colors diffuse and absorb into the paper.

STEAM Connections

- Science: This experiment shows diffusion—how water makes marker pigments move and mix. Scientists and artists use this process to study mixtures and chemical reactions.
- Art: Water changes how colors look and interact, creating soft blends and new colors.

Grade-Level Modifications

- K-1: Notice and describe: What happened to the colors when water was added?
- 2-3: Predict before dropping water: What do you think will happen if you add water to blue and red next to each other?
- 4-5: Record observations: How did the colors change? Did new colors form?

Station 3: Math in Prints (Art and Math) (10 minutes)

Students will solve the given math equation at the station. The solution is the total number of shapes to etch into their plate. They will etch the exact shapes listed in the equation, creating a pattern, and then print once onto their paper.

Directions to Students

1. Solve the equation below.

2. The answer tells you how many shapes to etch.
3. Etch the exact shapes listed in the equation.
4. Print your plate once onto your paper.

Grade-Level Equations

- K-1 (Counting): 3 triangles + 2 circles = ____ shapes
- 2-3 (Addition): 4 triangles + 3 circles = ____ shapes
- 4-5 (Multiplication):
 - o 2 squares \times 3 = ____ shapes
 - o 5 triangles \times 2 = ____ shapes

STEAM Connections

- Math: Equations connect numbers with visual symbols (shapes). Students practice counting, addition, or multiplication.
- Art: Shapes and repetition create balanced, math-based designs in printmaking.

Reflection and Cleanup (15 minutes)

Discuss with students what surprised them about their art experiments. What discoveries did they make? What creative problem solving did they encounter? Allow time for them to clean up materials and collect their final works of art.

Georgia Standards of Excellence Alignment

Visual Art

Creating (CR)

VAK.CR.1: Engages in the creative process to generate and visualize ideas by using subject matter and symbols to communicate meaning.

VAK.CR.2: Creates works of art based on selected themes.

VAK.CR.3: Understands and applies media, techniques, and processes of two-dimensional art.

VAK.CR.5: Demonstrates an understanding of the safe and appropriate use of materials, tools, and equipment for a variety of artistic processes.

Responding (RE)

VAK.RE.1: Discusses personal works of art and the artwork of others to enhance visual literacy.

Connecting (CN)

VAK.CN.2: Integrates information from other disciplines to enhance the understanding and production of works of art.

Science

This lesson plan aligns with the Science Georgia Standards of Excellence, particularly in the areas of scientific inquiry and the integration of scientific concepts with the arts. While specific standards may vary by grade level, the overarching themes include:

- **Scientific Inquiry:** Engaging students in investigations and experiments to explore scientific concepts.
- **Integration of Science and Art:** Applying scientific principles, such as diffusion and geometry, in artistic processes.
- **Use of Materials and Tools:** Understanding and utilizing various materials and tools in both scientific and artistic contexts.

STEAM Integration

This lesson connects with the STEAM (Science, Technology, Engineering, Art, and Mathematics) approach by:

- **Science:** Exploring diffusion through the interaction of water and markers.
- **Technology:** Utilizing tools like water droppers and texture plates.
- **Engineering:** Investigating how different materials and textures interact.
- **Art:** Creating layered, mixed-media artworks.
- **Mathematics:** Incorporating geometric shapes and equations in printmaking.