



GEOMETRY AND NATURE: DESIGNS IN GLASS

Images + Art Activities

(Upper Elementary)

CONCEPT: Frank Lloyd Wright designed many striking art glass windows and doors for his Prairie School houses. He used geometric shapes to represent patterns he saw in nature. After Wright designed a window pattern, a glass company made the window. The craftsmen used zinc or lead strips to make outlines of the design and then colored and clear glass were added. Sunlight shining through the leaded windows gave the rooms inside the house a beautiful, ever changing glow. Wright designed a particular pattern for each house, and then repeated the design throughout the house.

TO THE TEACHER: The images of art glass from the slide packet or the CD "Wright Art Glass" should be shown to students before the creative activity. Take time to explore each design with your class, and encourage them to talk about each window. Focus on the geometric shapes used to make each design. Tell the students that they will be creating their own art glass design after they see the images.

MATERIALS NEEDED:

Images from slides or CD- "Wright Art Glass"

Slide projector and carousel or computer with CD drive

Yardstick or pointer

Newsprint for sketching

Large sheets of white or manila construction paper 18"X 24"

Markers, crayons or oil pastels

Rulers

Pencils

(Optional Activity 1 - black construction paper, scissors, colored tissue, glue)

(Optional Activity 2 - masking tape, poster paint)

PROCEDURE:

1. Show the following images to the students and discuss each design. Students may wish to make sketches of the designs they see.

Image 1: F.L. Wright Home and Studio, 1889-1911. Frank Lloyd Wright designed this art glass window for the ceiling of the main entry to his studio/office. The window fits under an artificial skylight that is lit by light bulbs. What shapes do you see? Do you see any patterns in the glass? How is the pattern repeated? Name the colors used in the window. What dominant color family do you see?

Image 2: "Tree of Life" Window, Darwin D. Martin House, Buffalo, New York, 1904. Frank Lloyd Wright created this design for a house in New

York. He liked to design windows that were like light screens. The design and colored glass let light in but still made the inside feel private. Frank Lloyd Wright used geometric shapes to represent things in nature. The window design is based on the shape of a tree. Can you identify the tree shape in the design? We say that the shape is **abstract**. That means that the artist takes an inspiration from something natural and then changes or distorts its shape. What kinds of lines do you see: horizontal, vertical, diagonal? How are they repeated to make a pattern?

Image 3: Bradley House, Kankakee, Illinois, 1900. How is the window different from the "Tree of Life"? Does this window give more or less privacy to its owners than the "Tree of Life" design? The Bradley House is located on the banks of a river and surrounded by trees. Do you think the setting might have influenced Frank Lloyd Wright's decision not to use colored glass?

ART GLASS WINDOWS AT THE DANA-THOMAS HOUSE:

[Frank Lloyd Wright designed the art glass in the Dana-Thomas House using two basic motifs: the Sumac plant found on the Illinois prairie and the butterfly, a favorite of the Dana family. The Linden Glass Company of Chicago made the art glass to fit Frank Lloyd Wright's design for this house.]

Images 4-5: Sumac Window, Dining Room, Dana-Thomas House, Springfield, Illinois, 1902-04. This window is based on the design of a sumac plant which grows wild in the Midwest. In the fall, the Sumac turns bright colors of red and gold. The glass in the window is shiny and metallic looking on the outside, but inside the colors are warm and mellow. The abstract sumac pattern is found throughout the Dana-Thomas House. What colors are used to give the window a warm glow from the inside?

Look at the glass pattern from the outside. There are rainbow colors in it like you see in a soap bubble. What colors do you see on the outside of the glass?

Images 6-7: Entry Transom Above the Arched Door. The entryway to the Dana-Thomas House is in the shape of an arch. Surrounding the doorway are butterfly shapes. What shapes did Wright use to represent the parts of the butterfly? How are the shapes repeated? What colors are used?

Image 8: Reception Area Glass, Near Fireplace. Several sets of art glass windows and doors are located on the side of the reception hall. Imagine how the colors of the glass affect the lighting in the interior space when the sun is shining brightly.

Images 9-10: Hallway Doors, Reflections. Frank Lloyd Wright wanted his interior spaces to flow together rather than dividing the rooms into little boxes. He used art glass doors to separate his spaces.

Image 11: Dining Room Bookcase. These glass doors are located on the front of bookcases. What natural shape is represented by the geometric shapes?

Image 12: Art Glass, Master Bedroom. Frank Lloyd Wright designed a large leaded glass window for Susan Dana's bedroom. Look carefully at the pattern in the glass. Is it symmetrical or asymmetrical? (If you divide the pattern down the middle and it is the same on both sides, it is symmetrical.) Is the design balanced on the window? (Does it appear just as "heavy" on one side as the other?) Do you think this window would have the same effect if Frank Lloyd Wright used the primary colors of red, blue, and yellow for the glass?

2. Frank Lloyd Wright designed the art glass in his Prairie School houses using a central theme. Ask the students, "If you were creating a design for the glass in your home, what theme would you use?" Ask them to think of a shape from nature, (tree, plant, flower) and try to sketch it on their newsprint. Ask them to experiment with an abstract shape that could represent their natural shape.

3. The students should transfer their design to the large drawing paper. Remind them to use their rulers to draw this design and to measure each shape so that it can be repeated exactly. (Tell the students to use symmetry and to pay attention to repeating their pattern). Then have students choose a color scheme and color in areas of their design that would be executed in colored glass. Finally, darken the outlines of the major lines with black marker. (Tell the students that the dark outlines provide contrast with the colors).

EXTENSION #1 (Optional Activity):

Students can transfer their designs to black construction paper, thickening the spaces representing leaded pieces. Then the spaces representing glass can be carefully cut from the black paper. Display the tissue "windows" on the classroom window.

EXTENSION #2 (Optional Activity):

Have the class choose one or two student designs to represent the theme of the classroom. Let teams of students draw the design on the classroom window using soap for outlining, then apply masking tape along the lines.

Repeat the design on another window. Have the students use poster paint to paint the colors of the design. When the paint is dry, remove the tape and carefully paint in this space with black paint.