



## GEOMETRY AND NATURE:DESIGNS IN GLASS

### Images + Art Activities

(Middle School )

**CONCEPT:** Frank Lloyd Wright designed many striking art glass windows and doors for his Prairie School houses. These designs were very geometric in shape and often were based on things Wright found in nature. After Wright designed a window pattern, it was outlined with zinc or lead strips, and then colored and clear glass were added. Sunlight shining through the leaded windows gave interior rooms a beautiful, ever-changing glow. Wright designed a particular pattern for each house, and then used that repeated design (central theme or motif) throughout the house.

**TO THE TEACHER:** The images of art glass from the slide packet or 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. 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

12" x 18" black construction paper

White chalk

Markers, crayons or oil pastels

Rulers

Pencils

Colored tissue or cellophane

White glue

(Optional Activity 1 - soap, poster paint, masking tape)

(Optional Activity 2 - recycled glass panes, masking tape, colored markers)

#### **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 beneath an artificially lit skylight. 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. This famous design shows Wright's desire to create light screens for his homes, letting sunlight in, but preserving the privacy of his clients without resorting to using draperies. The window design is based on the shape of a tree. Can you identify the tree shape in the design? We call this geometric representation of nature an **abstraction**. That means that the artist takes an inspiration from something natural and then changes or distorts its shape. Frank Lloyd Wright used geometric shapes to represent natural organic shapes. 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 was responsible for executing the art glass to fit Frank Lloyd Wright's design for this house.]

**Images 4-5:** Sumac Window, Dining Room, Dana-Thomas House, Springfield, IL 1902-04. This window is based on the design of a sumac plant. 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 interior?

Look at the glass pattern from the outside. You could describe the window as having iridescence which means it has a play of colors producing a rainbow effect like in a soap bubble. What colors do you see on the exterior 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 abstract butterfly shapes. How did Wright 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.

**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. A large leaded glass window provides a spectacular backdrop 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 or motif. Ask the students, "If you were designing a motif in glass for your house, 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. (Tell the students to use symmetry and to pay attention to repeating their pattern.)

3. When the students have decided on a basic shape, ask them to use crayons or markers to experiment adding color to their preliminary designs.

4. The students should transfer the main lines of their design to the large black construction paper using chalk to make the lines show up. Remind them to use their rulers to draw this design and to measure each shape so that it can be repeated exactly. Students should then make parallel lines to each outline creating a thick line of about 1 cm or 1/2 in. in width.

5. Carefully using scissors or matte knives, students should cut out the areas that represent the glass of the window. After the shapes are all removed, colored tissue or cellophane shapes should be cut that are a bit larger than the spaces and glued with white glue to the back of the black sheet. Windows should be displayed on the classroom window.

EXTENSION #1 (Optional Activity):

Have the class choose one or two student designs to represent the motif 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 motif 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.

EXTENSION #2 (Optional Activity):

Use panes of recycled glass that are carefully taped with masking tape on the edges. Use markers to create designs on the glass.