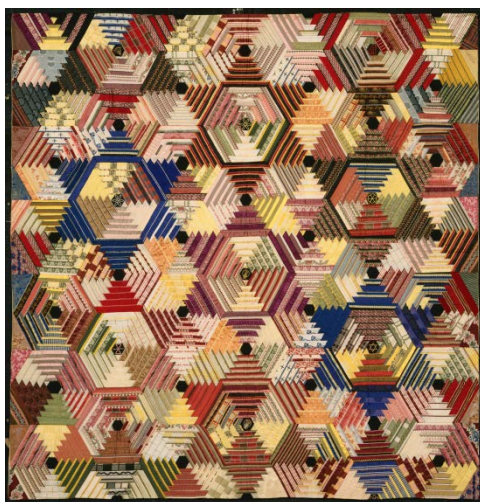


100-PATCH GEOMETRIC QUILTS

The lesson explores the myriad ways in which geometry and patterns are used to create quilt designs. How do shapes fit together to create designs and form patterns? What are some different visual effects that can be achieved through patterning? Why is geometric patterning a popular way to create designs with fabric? This lesson plan was adopted from one created by Megan Hess, a second and third grade teacher at Germantown Friends School in Philadelphia.



Hexagonal Log Cabin (Six-Pointed Star) Quilt,
c. 1890

Jane Tucker, American, and Rebecca Angelia
(Angie) Tucker, American

Fancy woven silk ribbons, plain weave and figured
silk, and silk embroidery in feather, outline, and
buttonhole stitches and French knots

67 x 65 inches (170.2 x 165.1 cm)

Gift of Harriet Plimpton, 1957

1957-17-1

Curricular Areas

Mathematics – Geometry

Grade Level

For grades 2–4

Common Core Academic Standards

- [CCSS.Math.Content.2.G.A.3](#)
- [CCSS.Math.Content.3.G.A.1,2](#)
- [CCSS.Math.Content.4.G.A.2](#)

PA Academic Standards for Art

- 9.1: Production, Performance and Exhibition A,C,D
- 9.2: Historical and Cultural Contexts A,H

Art Images Required

Click on the titles below to view high-resolution
photographs on the Philadelphia Museum of Art website.
Images that are available in the ARTstor Digital Library are

indicated by an ID number or search phrase. Entering that number or phrase into the ARTstor search bar will direct you to the corresponding image in that database.

- [Hexagonal Log Cabin \(Six-Pointed Star\) Quilt](#), c. 1890, by Jane Tucker
ARTstor search: Not available
- [Sunburst Quilt](#), 1839, by Rebecca Scattergood Savery
ARTstor search: PMA 1975-5-1
- [Quilt](#), c. 1910, artist unknown
ARTstor search: PMA 1994-102-4

Lesson Process: Day 1

1. Introduce students to polygons (closed, straight-sided, 2-D shapes) and the different names for polygons (triangle, quadrilateral, pentagon, hexagon, etc.). Give students pre-cut 1 x 1" construction paper squares, which they will cut in half, diagonally. Have them experiment with how many shapes they can make using exactly four triangles. How many quadrilaterals can be made? Triangles? Pentagons? Hexagons?
2. Discussion: What is a patchwork quilt? Can you figure out why people have made patchwork quilts for centuries? Students can brainstorm reasons why, such as: to keep warm; to make use of fabric scraps so that nothing goes to waste; to tell a story; to preserve the memory of someone; to celebrate a marriage or birth; to create something beautiful.
3. Introduce some different geometric shapes and patterns that people have used in patchwork quilts by projecting images from the above list. Discuss the different shapes that are used in each, and the different shapes and patterns that are created within the larger design. How do the shapes fit together? How do you think the quiltmakers put these quilts together? Do you think they started at the edges or in the center? What do you see that makes you say that? Are these designs symmetrical? Why or why not?

Lesson Process: Day 2

1. Explain to students that today they will explore what kinds of designs can be made with triangles and squares.
2. In pairs, students will select **two** different pieces of colored construction paper (12 x 18"), which they will cut into 2 x 2" squares, using a ruler to measure. Following this, students will cut a few of these squares diagonally to form triangles.
3. Students will arrange paper shapes to make **two** different tessellation designs in 4 x 4" squares (see Worksheet A), which they will glue to paper.

Lesson Process: Day 3

1. Explain that today's task is to make a bigger design using the same squares and triangles.
2. Using the same shape sizes and colors as yesterday, ask students to create larger, s-block square (see Worksheet B). They may use their designs from Day Two, either with or without borders to create a new design.

Lesson Process: Day 4

1. Now it's time to make 100-patch paper quilts! Give each student a 20 x 20" piece of paper (heavy weight) and a glue stick. Students will draw a grid of 2 x 2" squares to fill the entire paper. Discuss design possibilities. How might you use the previous day's design on the bigger grid? Will you use it as a centerpiece and then build outward? Or use it as a repeated design in four corners? Perhaps you will come up with a new design! Look at the images of quilts for design ideas. The only rule in this assignment is to come up with some kind of design or pattern.

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Assessment

1. Display the students' 100-patch paper quilts in the classroom and discuss their shapes and patterns. How many different polygons were created? Are the designs symmetrical or asymmetrical? What are some similarities between the quilts?
2. Provide students with a grid of 100 dots. Have them connect dots to create shapes, aiming to make a symmetrical design, which they will then fill with color. (NOTE: They do not have to use every single dot, but the entire grid should be colored in.)

Enrichment

1. Read and discuss Valerie Flournoy's book *The Patchwork Quilt*, which is about a young girl and a patchwork quilt that her grandmother sews. Discuss why the quilt is special to Tanya, her grandmother, and her family.

WORKSHEET A

Design 1

Design 2

WORKSHEET B
