

Constructing Task: A Quilt of Symmetry

STANDARDS FOR MATHEMATICAL CONTENT

MCC.4.G.3_ Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

STANDARDS FOR MATHEMATICAL PRACTICE

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

BACKGROUND KNOWLEDGE

Students should have previous experiences with symmetry and finding lines of symmetry prior to this task. This task focuses on creating a class symmetry quilt made up of paper “quilt squares” that has exactly one line of symmetry.

This task links with many children’s literature books about quilting, including *The Patchwork Quilt* or *Sam Johnson and the Blue Ribbon Quilt*. Opening this task by reading a book about quilting will help students make a real-world connection between math, literature, art, and history.

ESSENTIAL QUESTIONS

- How do you determine lines of symmetry? What do they tell us?
- How are symmetrical figures used in artwork?

MATERIALS

- Pattern blocks
- “Quilt of Symmetry Patchwork Squares” Sheet for each student
- Paper pattern blocks to glue on squares (optional)

TASK DESCRIPTION, DEVELOPMENT, AND DISCUSSION

Student Directions:

Georgia Department of Education
Common Core Georgia Performance Standards Framework
Fourth Grade Mathematics • Unit 6

Our class is creating a class symmetry quilt. Your job is to create two identical squares for our quilt. The design of your square is up to you, but it must fulfill the following criteria:

- You may use up to 10 pattern blocks to create your square.
- Your square must have only 1 line of symmetry.
- Your design must fit inside the patchwork square provided.

After completing your design on one square, you must recreate the exact design on the second.

- On one of your squares, use a marker or pencil to draw the line of symmetry. On the back of the square, explain how you know that line is a line of symmetry. Also, explain the strategy you used when you designed your square.
- Give the other square to a partner to verify the line of symmetry. Your “unmarked” square will be used to construct our class quilt.

Students can either trace pattern blocks directly on the squares or they can color and glue on paper pattern blocks. All of the unmarked squares can be glued on bulletin board paper or hole punched and tied together like a quilt.

FORMATIVE ASSESSMENT QUESTIONS

- How do you know your square had symmetry?
- How do you know your square had only one line of symmetry?
- Were students able to identify lines of symmetry?
- What strategies did students use for verifying their lines of symmetry?
- Were students able to explain their strategies for finding symmetry?

DIFFERENTIATION

Extension

- Students may use Geometer’s Sketchpad or the “draw tool” in word processing software or a “paint” program in order to draw their quilt squares.

Intervention

- Give students paper pattern blocks to fold and place on their quilt squares.
- Allow students to use mirrors or fold their “marked” squares to verify symmetry.

Name _____ Date _____

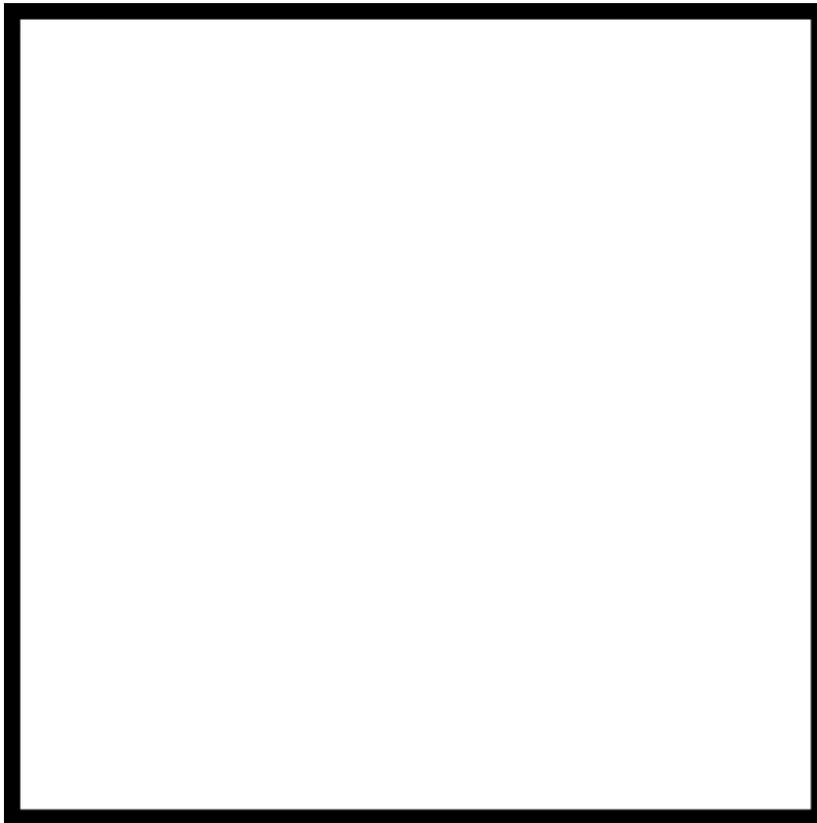
A Quilt of Symmetry

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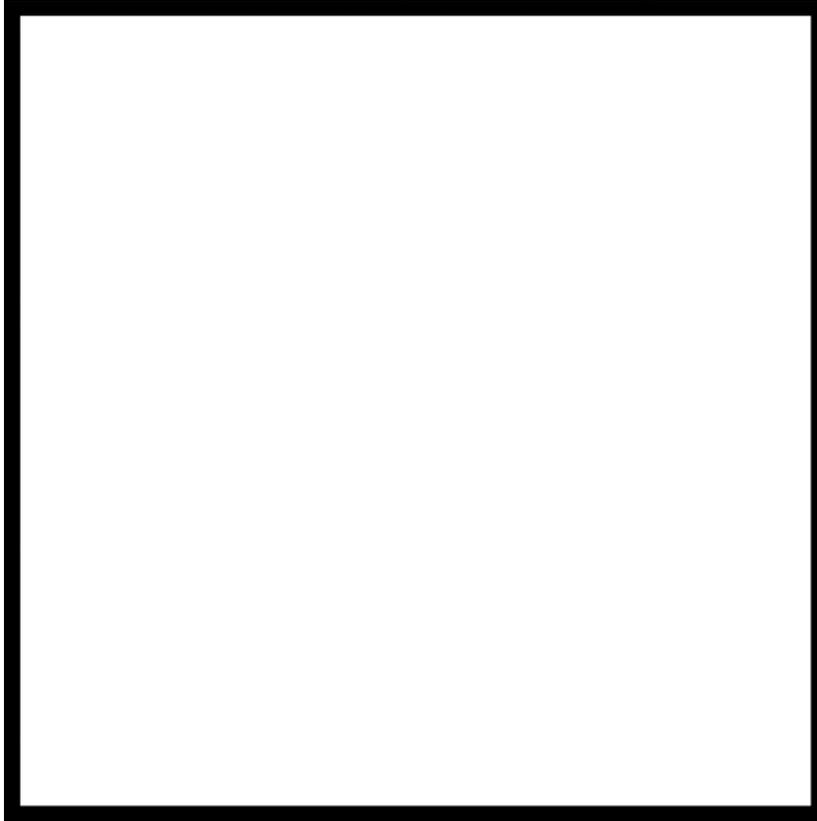
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A Quilt of Symmetry Patchwork Squares



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