

Paper Quilt Square

Teacher Guide · Solutions · Rubric

Grade 2 · All levels

Overview

Students design a class paper quilt. They name and draw shapes by sides and angles, partition a rectangle into rows and columns of same-size squares, and color halves, thirds and fourths, explaining that equal shares can look different.

Time: 2 class periods · **Product:** Paper Quilt Square
Standards: 2.G.A.1, 2.G.A.2, 2.G.A.3
Prerequisite skills: Count within 100; Arrays (Unit 2)

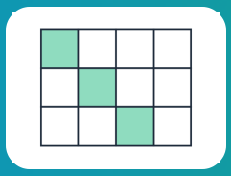
Learning targets

- I can name and draw shapes by their sides and angles.
- I can partition a rectangle into rows and columns of squares and count them.
- I can make halves, thirds and fourths.

Timing and materials

- Day 1 (40 min): shapes and the quilt grid (Parts 1–2).
- Day 2 (40 min): equal shares and the finished quilt square (Parts 3–4).

Materials: Square paper or construction paper; Rulers; Crayons or colored pencils; Dot paper and grid paper (printable support page); Scissors and glue. No accounts, paid products or student personal information are needed.



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The three versions

- Remedial: hints for a first step, partly filled tables, sentence frames and fewer open choices; the same learning targets.
- Standard: the full task set at grade level; students choose their strategies and models.
- Advanced: open design constraints, missing information, error analysis and a written justification; no hints.

All versions use the same context and learning targets, so groups can share and compare work.

Implementation notes

- Fold paper to check that shares are equal.
- Turn shapes to show the name does not change.
- Advanced students cut the same square into halves two different ways and prove the halves are equal.
- Before Part 1, read the challenge aloud and ask students to restate the goal.
- Close with a gallery walk: each group explains one strategy.

Rubric

Learning target	4 Exceeds	3 Meets	2 Approaching	1 Beginning
I can name and draw shapes by their sides and angles.	Correct and complete; explains how	Mostly correct	Partly correct	Not yet
I can partition a rectangle into rows and columns of squares and count them.	Correct and complete; explains how	Mostly correct	Partly correct	Not yet
I can make halves, thirds and fourths.	Correct and complete; explains how	Mostly correct	Partly correct	Not yet
I can explain my thinking with pictures, numbers and words.	Clear for every part	Clear for most parts	Some explanation	Little explanation
My paper quilt square is complete and matches my math.	Complete, neat, accurate	Complete	Partly complete	Not complete

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Solutions · Remedial KEY

Part 1: Shape Patches

Draw each shape on dot paper.

1. Draw a shape with 5 sides. What is it called?
   pentagon
2. How many angles does a hexagon have?
   6 angles
3. Draw a quadrilateral that is not a square or a rectangle.
   Answers vary; it must have 4 straight sides.

Part 2: Quilt Grid

Partition your quilt rectangle into 2 rows and 3 columns of same-size squares.

4. How many squares are there?
   6 squares
5. Write a repeated-addition equation.
   3 + 3 = 6

Part 3: Equal Shares

Color some squares in halves, thirds and fourths.

6. Cut one square into 4 equal shares. What is each share called?
   one fourth
7. How many thirds make a whole?
   3 thirds
8. Which is bigger: one half or one fourth of the same square?
   one half

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Part 4: My Quilt Square

Finish your quilt square with at least two shapes and one square cut into equal shares.

9. Label each shape and each share.

Answers vary; labels must match the drawing.

Extension

The class quilt has 4 rows of 5 quilt squares. How many squares in all?

20 squares (5 + 5 + 5 + 5)

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Solutions · Standard KEY

Part 1: Shape Patches

Draw each shape on dot paper.

1. Draw a shape with 5 sides. What is it called?
   pentagon
2. How many angles does a hexagon have?
   6 angles
3. Draw a quadrilateral that is not a square or a rectangle.
   Answers vary; it must have 4 straight sides.

Part 2: Quilt Grid

Partition your quilt rectangle into 3 rows and 4 columns of same-size squares.

4. How many squares are there?
   12 squares
5. Write a repeated-addition equation.
   4 + 4 + 4 = 12

Part 3: Equal Shares

Color some squares in halves, thirds and fourths.

6. Cut one square into 4 equal shares. What is each share called?
   one fourth
7. How many thirds make a whole?
   3 thirds
8. Which is bigger: one half or one fourth of the same square?
   one half

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Part 4: My Quilt Square

Finish your quilt square with at least two shapes and one square cut into equal shares.

9. Label each shape and each share.

Answers vary; labels must match the drawing.

Extension

The class quilt has 4 rows of 5 quilt squares. How many squares in all?

20 squares (5 + 5 + 5 + 5)

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Solutions · Advanced KEY

Part 1: Shape Patches

Draw each shape on dot paper.

1. Draw a shape with 5 sides. What is it called?
   pentagon
2. How many angles does a hexagon have?
   6 angles
3. Draw a quadrilateral that is not a square or a rectangle.
   Answers vary; it must have 4 straight sides.

Part 2: Quilt Grid

Partition your quilt rectangle into 4 rows and 5 columns of same-size squares.

4. How many squares are there?
   20 squares
5. Write a repeated-addition equation.
   5 + 5 + 5 + 5 = 20

Part 3: Equal Shares

Color some squares in halves, thirds and fourths.

6. Cut one square into 4 equal shares. What is each share called?
   one fourth
7. How many thirds make a whole?
   3 thirds
8. Which is bigger: one half or one fourth of the same square?
   one half

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Part 4: Prove It

Explain with drawings.

9. Cut one square into halves with a straight line and another with a diagonal line. Are the halves the same size? Explain.

Yes. Each is half of the same square, even though one is a rectangle and one is a triangle.

10. Raj cut a rectangle into 3 parts that are not the same size and called them thirds. What is wrong?

Thirds must be equal shares.

Extension

The class quilt has 4 rows of 5 quilt squares. How many squares in all?

20 squares (5 + 5 + 5 + 5)