

Fold Line Detectives

Draw the lines that make matching halves.

GRADE 3 • 3.GSR.6.3

3.GSR.6.3 "Identify lines of symmetry in polygons."

NAME _____

DATE _____

Use a pencil and ruler. Draw fold lines directly on the supplied shapes. For a shape with no fold lines, write none. You may use scrap paper to check a fold.

Match by folding

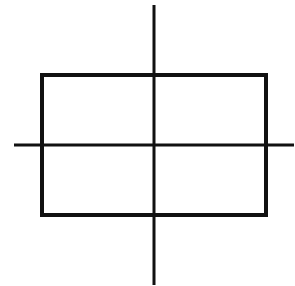
A line of symmetry is a fold line that makes both parts match exactly. Check every corner and side. Equal areas alone do not guarantee matching halves.

Try it together

A rectangle that is not a square has two lines of symmetry. Why is its diagonal not another fold line?

A vertical fold line matches the left and right sides. A horizontal fold line matches the top and bottom. The diagonal does not match the long side onto the short side.

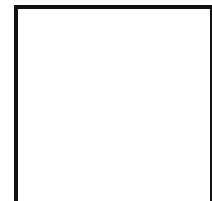
Rectangle with its two fold lines



1. A square

Square

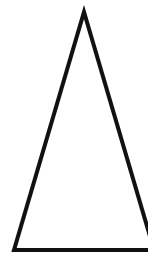
Draw ALL lines of symmetry on this square. How many are there?



2. A triangle

Triangle

Draw every line of symmetry on this triangle. How many are there?



3. A slanted shape

Parallelogram

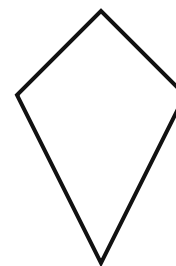
Does this parallelogram have any lines of symmetry? Try a fold in your mind. Explain.



4. A kite

Kite

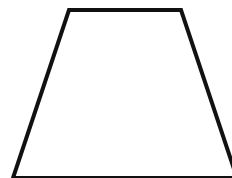
Draw every line of symmetry on this kite. Would a horizontal fold line work too?



5. Fold a sign

Sign

This trapezoid is a sign. Draw the line where you could fold it so the halves match. Explain how the corners match.

**6. Design a card**

Design a five-sided card with exactly ONE line of symmetry in the box. Draw its fold line.

A large, empty rectangular box with a thin black border, intended for a student to draw a five-sided card with one line of symmetry.**7. Test a claim**

A student says: Every four-sided shape has a line of symmetry. Use one shape on this sheet to show whether the claim is true.

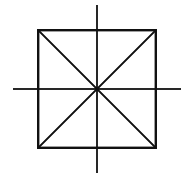
Teacher notes

Check fold lines against the actual printed polygons, including their corners. Accept small drawing inaccuracies. The triangle is isosceles, not equilateral; the kite has unequal top and bottom sides. The parallelogram is neither a rectangle nor a rhombus. The task 6 teacher drawing is an example, not a required size or orientation.

Task 1

4 lines: horizontal, vertical and both diagonals.

Four fold lines

**Task 2**

1 line, from the top vertex to the midpoint of the bottom side.

One fold line

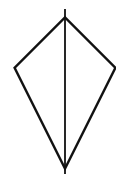
**Task 3**

No lines of symmetry. A fold through the middle cannot match all four corners and sides of this slanted parallelogram.

Task 4

One vertical line works. A horizontal fold does not match the short top sides with the longer bottom sides.

One fold line

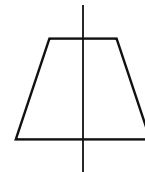


Task 5

One vertical fold line through the midpoints of the two horizontal sides. The top corners match each other, and the bottom corners match each other.

Check the reasoning and units as well as the answer.

Sign fold line

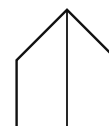


Task 6

One example is the house-shaped pentagon in the key. Its single fold line runs vertically through the roof tip and bottom midpoint.

Check that the drawing has five straight sides and only one fold line. Accept rotated or reflected designs with these properties.

Example five-sided card



Task 7

False. The slanted parallelogram in task 3 has four sides and no lines of symmetry.