

Fold Line Detectives

Sort figures by whether a fold can make matching halves.

MA.3.GR.1.3 "Draw line(s) of symmetry in a two-dimensional figure and identify line-symmetric two-dimensional figures."

NAME _____

DATE _____

HAS LINE SYMMETRY

A figure has line symmetry if you can fold it on a line and both halves match exactly.

A regular hexagon has lines of symmetry.

HAS NO LINE SYMMETRY

A figure has no line symmetry if no fold line makes both halves match exactly.

The capital letter F has no line of symmetry.

1 SORT

8 items

For Part 1, circle the category for each figure; for Part 2, choose one item from each category and explain how a fold line would or would not make matching halves.

1. A square.

SYMMETRY

NO MATCH

2. An isosceles triangle with its point above the middle of its base.

SYMMETRY

NO MATCH

3. A slanted parallelogram with 2 long sides and 2 short sides.

SYMMETRY

NO MATCH

4. A circle.

SYMMETRY

NO MATCH

5. A triangle with three different side lengths.

SYMMETRY

NO MATCH

6. A trapezoid with its short top side shifted to the left.

SYMMETRY

NO MATCH

7. A rectangle that is not a square.

SYMMETRY

NO MATCH

8. A regular octagon.

SYMMETRY

NO MATCH

2

PROVE IT

Explain your thinking

Pick two items from Part 1. For each one, tell how you knew where it belonged.

ITEM # _____ HOW I KNEW _____

ITEM # _____ HOW I KNEW _____

3

MAKE YOUR OWN

One of each

Write one new example that has line symmetry and one new example that has no line symmetry.

SYMMETRY _____

NO MATCH _____

CHALLENGE

Draw a figure with exactly 2 lines of symmetry, then draw both lines.

PART 1 • SORT

#	ITEM	CATEGORY	WHY
1	A square.	SYMMETRY	A square has 4 lines of symmetry.
2	An isosceles triangle with its point above the middle of its base.	SYMMETRY	A vertical line from the point to the base makes matching halves.
3	A slanted parallelogram with 2 long sides and 2 short sides.	NO MATCH	No fold line makes the slanted parallelogram's halves match.
4	A circle.	SYMMETRY	Any line through the center is a line of symmetry.
5	A triangle with three different side lengths.	NO MATCH	Its sides cannot match across a fold line.
6	A trapezoid with its short top side shifted to the left.	NO MATCH	The shifted top side prevents matching halves.
7	A rectangle that is not a square.	SYMMETRY	It has a vertical and a horizontal line of symmetry.
8	A regular octagon.	SYMMETRY	A regular octagon has 8 lines of symmetry.

PART 2 • PROVE IT

Accept any explanation that names the deciding feature from the rule box for the chosen item.

PART 3 • MAKE YOUR OWN (SAMPLE ANSWERS)

- **SYMMETRY:** An equilateral triangle.
- **NO MATCH:** A quadrilateral with four different side lengths.

Challenge: A longer-than-wide oval with one vertical line and one horizontal line through its center.

For Part 2, accept explanations that describe a fold line and matching or nonmatching halves. Students may use different correct figures in Part 3 and the challenge.