Fold It or Not

Sort figures by whether one fold makes matching halves.

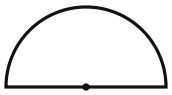
2.MG.3 "The student will identify, describe, and create plane figures (including circles, triangles, squares, and rectangles) that have at least one line of symmetry and explain its relationship with congruency..."

NAME _____ DATE _____

HAS A LINE OF SYMMETRY

A line of symmetry is a line you can fold on so both parts match exactly. The two parts are congruent, so they have the same shape and size.

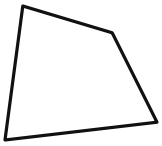
A semicircle folds into two matching parts on one line.



HAS NO LINE OF SYMMETRY

No fold line makes this figure's two halves match exactly by reflection across that line. Congruent pieces can sometimes match after a turn without matching by a fold; that is not line symmetry.

This uneven four-sided figure does not fold into matching parts.



1 SORT

8 items

Circle FOLDS or NO FOLDS for each figure, then choose two figures and explain how folding or drawing a line would prove your choices.

1.

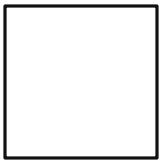


Figure 1

FOLDS NO FOLDS

2.

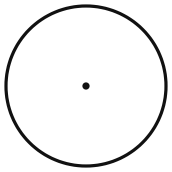


Figure 2

FOLDS NO FOLDS

3.

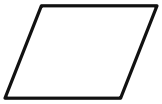


Figure 3

FOLDS NO FOLDS

4.

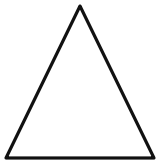


Figure 4

FOLDS NO FOLDS

5.

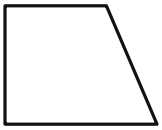


Figure 5

FOLDS NO FOLDS

6.

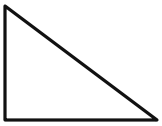


Figure 6

FOLDS NO FOLDS

7.



Figure 7

FOLDS NO FOLDS

8.

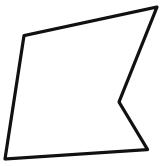


Figure 8

FOLDS NO FOLDS

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 for FOLDS and one for NO FOLDS. Draw each figure.

FOLDS

NO FOLDS

CHALLENGE

Draw a figure with two lines of symmetry. Draw both lines, then tell how each line makes two congruent parts.

ANSWER KEY

Fold It or Not

GRADE 2 · 2.MG.3

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1 (square)	**FOLDS**	A square has four lines of symmetry. Any symmetry line makes two congruent halves.
2	Figure 2 (circle)	**FOLDS**	A circle has many lines of symmetry. Any line through its center makes two congruent halves.
3	Figure 3 (parallelogram)	**NO FOLDS**	THIS pictured parallelogram is neither a rectangle nor a rhombus; it has no reflection line. A non-square rhombus is also a parallelogram, but does have diagonal fold lines.
4	Figure 4 (isosceles)	**FOLDS**	An isosceles triangle has one line of symmetry from the top corner to the middle of the base.
5	Figure 5 (right_trapezoid)	**NO FOLDS**	This pictured right trapezoid has no fold line across which both halves match exactly.
6	Figure 6 (polygon)	**NO FOLDS**	This scalene triangle has no line of symmetry.
7	Figure 7 (rectangle)	**FOLDS**	A rectangle has two lines of symmetry, one across the middle from top to bottom and one across the middle from side to side.
8	Figure 8 (polygon)	**NO FOLDS**	This uneven five-sided figure has no line 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)

- **FOLDS**: An equilateral triangle.
- **NO FOLDS**: A scalene triangle.

Challenge: Draw a square. Draw both diagonal lines. Each diagonal makes two congruent triangles.

For Part 2, accept explanations that correctly use folding or a drawn line to show matching halves or nonmatching halves. Students may name any valid line of symmetry for Figures 1, 2, 4, or 7. Congruent means the same shape and size; line symmetry additionally requires the halves to match by reflection across the specified line, not only after a turn. Figure 6 uses visibly unequal 60,80,100 relative side lengths.