Symmetry Shape Detectives

Sort figures by whether they have a line of symmetry.

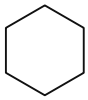
4.GSR.8.2 "Classify, compare, and contrast polygons based on lines of symmetry, the presence or absence of parallel or perpendicular line segments, or the presence or absence of angles of a specified size and based on side lengths."

NAME _____ DATE _____

HAS A LINE OF SYMMETRY

Put a figure here if you can fold it along a line and both halves match exactly.

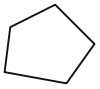
A regular hexagon has lines of symmetry.



HAS NO LINE OF SYMMETRY

Put a figure here if no line can fold it into two matching halves.

This uneven five-sided polygon has no line of symmetry.



1 SORT

8 items

For Part 1, circle the category for each figure, then for Part 2, choose two figures and explain how you knew where each one belongs.

1.

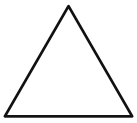


Figure 1

SYMMETRY NO LINES

2.

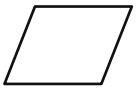


Figure 2

SYMMETRY NO LINES

3.

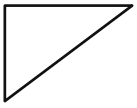


Figure 3

SYMMETRY NO LINES

4.

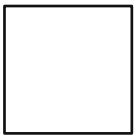


Figure 4

SYMMETRY NO LINES

5.



Figure 5

SYMMETRY NO LINES

6.

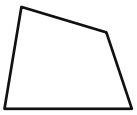


Figure 6

SYMMETRY NO LINES

7.

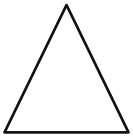


Figure 7

SYMMETRY NO LINES

8.

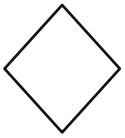


Figure 8

SYMMETRY NO LINES

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

For Part 3, write one new polygon with a line of symmetry and one new polygon with no line of symmetry.

SYMMETRY

NO LINES

CHALLENGE

Draw a polygon with exactly one line of symmetry, then draw its line of symmetry.

ANSWER KEY

Symmetry Shape Detectives

GRADE 4 · 4.GSR.8.2

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1 (equilateral)	**SYMMETRY**	An equilateral triangle has 3 lines of symmetry.
2	Figure 2 (parallelogram)	**NO LINES**	A parallelogram that is not a rectangle or rhombus has no line of symmetry.
3	Figure 3 (polygon)	**NO LINES**	This scalene right triangle has no line of symmetry.
4	Figure 4 (square)	**SYMMETRY**	A square has 4 lines of symmetry.
5	Figure 5 (rectangle)	**SYMMETRY**	A rectangle has 2 lines of symmetry.
6	Figure 6 (polygon)	**NO LINES**	This uneven quadrilateral has no line of symmetry.
7	Figure 7 (isosceles)	**SYMMETRY**	An isosceles triangle has 1 line of symmetry.
8	Figure 8 (rhombus)	**SYMMETRY**	A rhombus has 2 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**: Has a line of symmetry: a regular octagon.
- **NO LINES**: Has no line of symmetry: a scalene triangle.

Challenge: Draw an isosceles triangle that is not equilateral. Draw a line from the top vertex to the midpoint of the base.

Accept any correct explanations that describe matching halves when folded. For the challenge, accept any polygon with exactly one correctly drawn line of symmetry.