Fold Line Detectives

Sort figures, prove two choices, and create your own.

CCSS.Math.Content.4.G.A.3 "Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry."

NAME _____ DATE _____

HAS A LINE OF SYMMETRY

A figure is symmetric if you can fold it along at least one line and the two parts match exactly.

A regular hexagon can fold along several lines to make matching parts.



HAS NO LINE OF SYMMETRY

A figure is asymmetric if no line can fold it into two matching parts.

This uneven triangle cannot fold into matching parts.



1 SORT

8 items

For Part 1, circle SYMMETRIC or ASYMMETRIC for each figure, then in Part 2 choose two figures and explain how folding shows your choice.

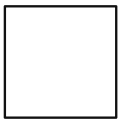
1. 

Figure 1

SYMMETRIC ASYMMETRIC

2. 

Figure 2

SYMMETRIC ASYMMETRIC

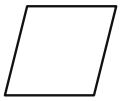
3. 

Figure 3

SYMMETRIC ASYMMETRIC

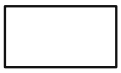
4. 

Figure 4

SYMMETRIC ASYMMETRIC

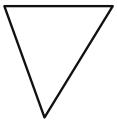
5. 

Figure 5

SYMMETRIC ASYMMETRIC

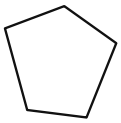
6. 

Figure 6

SYMMETRIC ASYMMETRIC

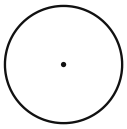
7. 

Figure 7

SYMMETRIC ASYMMETRIC

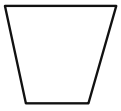
8. 

Figure 8

SYMMETRIC ASYMMETRIC

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

Part 3: Draw one new SYMMETRIC figure and show a line of symmetry. Then draw one new ASYMMETRIC figure.

SYMMETRIC

ASYMMETRIC

CHALLENGE

Draw a figure with exactly two lines of symmetry. Draw both lines.

ANSWER KEY # Fold Line Detectives

GRADE 4 · 4.G.A.3

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1 (square)	**SYMMETRIC**	A square has four lines of symmetry.
2	Figure 2 (isosceles)	**SYMMETRIC**	An isosceles triangle has one line of symmetry from the top vertex to the midpoint of the base.
3	Figure 3 (polygon)	**ASYMMETRIC**	This slanted parallelogram has no fold line that makes matching halves.
4	Figure 4 (rectangle)	**SYMMETRIC**	A rectangle has a vertical and a horizontal line of symmetry.
5	Figure 5 (polygon)	**ASYMMETRIC**	The three sides are different lengths, so no fold makes matching halves.
6	Figure 6 (polygon)	**ASYMMETRIC**	Its sides and corners do not match across any possible fold line.
7	Figure 7 (circle)	**SYMMETRIC**	Any line through the center of a circle is a line of symmetry.
8	Figure 8 (polygon)	**ASYMMETRIC**	The left and right sides do not match, so it 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)

- **SYMMETRIC**: Draw a semicircle with a line through its center that is perpendicular to the diameter.
- **ASYMMETRIC**: Draw a scalene triangle.

Challenge: Draw an oval. Draw one vertical line and one horizontal line through its center.

For Part 2, accept explanations that name a possible fold line and state whether the two halves would match. A figure needs at least one matching fold line to be SYMMETRIC.