Fold or Not?

Sort figures by reflection symmetry.

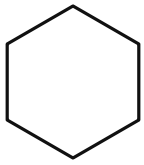
GDA.GM.D.22.c "Draw figures with different types of symmetries and describe their attributes."

NAME _____ DATE _____

LINE SYMMETRY

A figure has line symmetry if you can fold it along a straight line so both halves match exactly. The fold line is called a line of symmetry.

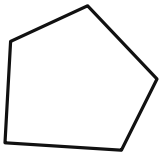
A regular hexagon has lines of symmetry.



NO LINE SYMMETRY

No straight fold line makes both halves of the figure match exactly. A figure might still match itself when turned.

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



1 SORT

8 items

For each figure, circle FOLDS or NO FOLD; then choose one figure from each category and explain how you knew.

1.



Figure 1

FOLDS NO FOLD

2.

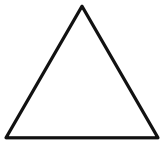


Figure 2

FOLDS NO FOLD

3.



Figure 3

FOLDS **NO FOLD**

4.

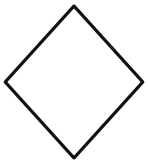


Figure 4

FOLDS **NO FOLD**

5.

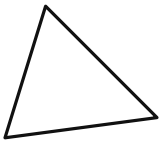


Figure 5

FOLDS **NO FOLD**

6.

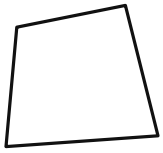


Figure 6

FOLDS **NO FOLD**

7.

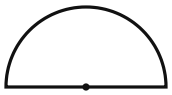


Figure 7

FOLDS **NO FOLD**

8.

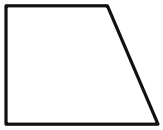


Figure 8

FOLDS **NO FOLD**

2 PROVE IT

Explain your thinking

Choose one figure from each category and explain how you knew.

ITEM # _____ **HOW I KNEW** _____

ITEM # _____ **HOW I KNEW** _____

3 MAKE YOUR OWN

One of each

Draw one new figure for each category, and write one sentence describing the line symmetry of each.

FOLDS

NO FOLD

CHALLENGE

Draw a new figure with both line symmetry and rotational symmetry, then state its number of lines of symmetry and its smallest angle of rotation.

ANSWER KEY # Fold or Not?

HIGH SCHOOL · GDA.GM.D.22.c

PART 1 · SORT

#	ITEM	CATEGORY	WHY
1	Figure 1 (rectangle)	**FOLDS**	A rectangle has a horizontal and a vertical line of symmetry.
2	Figure 2 (equilateral)	**FOLDS**	An equilateral triangle has three lines of symmetry.
3	Figure 3 (parallelogram)	**NO FOLD**	This oblique parallelogram has half-turn symmetry but no line of symmetry.
4	Figure 4 (rhombus)	**FOLDS**	Each diagonal of a rhombus is a line of symmetry.
5	Figure 5 (polygon)	**NO FOLD**	The three side lengths differ, so this triangle has no line of symmetry.
6	Figure 6 (polygon)	**NO FOLD**	This uneven quadrilateral has no line that divides it into matching halves.
7	Figure 7 (semicircle)	**FOLDS**	A line through the midpoint of the diameter, perpendicular to it, divides a semicircle into matching halves.
8	Figure 8 (right_trapezoid)	**NO FOLD**	The right trapezoid has no line that divides it into matching halves.

PART 2 · PROVE IT

Task: Choose one figure from each category and explain how you knew.
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 isosceles trapezoid has one line of symmetry.
- **NO FOLD**: A scalene right triangle has no line of symmetry.

Challenge: A regular octagon has eight lines of symmetry and a smallest angle of rotation of 45°.

For Part 2, students should identify a matching fold line for a FOLDS figure and explain why no fold line works for a NO FOLD figure. Drawings in Part 3 and the challenge should match the properties stated in the written answers.