

Symmetry Shape Sort

Compare mirror lines in five quadrilaterals.

GRADE 7 • 7.MG.3.a.iii

7.MG.3.a.iii "Compare and contrast properties of the following quadrilaterals: parallelogram, rectangle, square, rhombus, and trapezoid: lines of symmetry."

NAME _____

DATE _____

FOLD LINES THAT MATCH

A line of symmetry is a line you could fold on so both halves match like mirror images. Imagine folding the shape on a possible line, then check whether every part on one side matches a part on the other side. Count only the folds that make matching halves.

WORKED EXAMPLE

An isosceles trapezoid is printed on a stage pass. How many lines of symmetry does it have?

1. Test a fold perpendicular to both bases through their midpoints.
2. The left half matches the right half.
3. Horizontal and diagonal folds do not make matching halves.

Answer: 1 line of symmetry

PRACTICE 6 problems

- 1** A parallelogram has no right angles and is not a rhombus. How many lines of symmetry does it have?

ANSWER _____

- 2** How many lines of symmetry does a rectangle that is not a square have?

ANSWER _____

- 3** How many lines of symmetry does a rhombus that is not a square have?

ANSWER _____

- 4** How many lines of symmetry does a non-isosceles trapezoid have?

ANSWER _____

- 5** Which has more lines of symmetry, a rectangle that is not a square or a non-isosceles trapezoid? How many more?

ANSWER _____

- 6** Among a parallelogram, rectangle, square, rhombus, and trapezoid, which shape has 4 lines of symmetry?

ANSWER _____

APPLY IT Show your work

- 1** The student council designs a rectangular ticket that is not a square and a square frame for a photo booth. They place a border on every line of symmetry of both designs. How many borders do they place altogether?

WORK SPACE

ANSWER _____

- 2** A robotics club uses a rhombus that is not a square for its team logo and a non-isosceles trapezoid for a supply label. It adds a reflective strip along every line of symmetry on both shapes. How many reflective strips are needed?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Among the five quadrilaterals in this lesson, identify each shape and explain your reasoning. Shape A has 0 lines of symmetry and exactly a single pair of parallel sides. Shape B has 2 lines of symmetry, all sides equal, and no right angles. Shape C has 4 lines of symmetry.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A parallelogram has no right angles and is not a rhombus. How many lines of symmetry does it have?	0 lines of symmetry
2	How many lines of symmetry does a rectangle that is not a square have?	2 lines of symmetry
3	How many lines of symmetry does a rhombus that is not a square have?	2 lines of symmetry
4	How many lines of symmetry does a non-isosceles trapezoid have?	0 lines of symmetry
5	Which has more lines of symmetry, a rectangle that is not a square or a non-isosceles trapezoid? How many more?	A rectangle that is not a square has 2 more lines of symmetry.
6	Among a parallelogram, rectangle, square, rhombus, and trapezoid, which shape has 4 lines of symmetry?	A square

PART 2 • APPLY IT

- 6 borders** The non-square rectangle has 2 lines of symmetry, and the square has 4. Add $2 + 4$ to get 6.
- 2 reflective strips** The non-square rhombus has 2 lines of symmetry, and the non-isosceles trapezoid has 0. Add $2 + 0$ to get 2.

CHALLENGE

Shape A is a non-isosceles trapezoid. Shape B is a rhombus that is not a square. Shape C is a square. A non-isosceles trapezoid can have 0 lines of symmetry, a non-square rhombus has 2 diagonal symmetry lines, and a square has 4 lines of symmetry.

Accept numerals or words for symmetry counts, such as "0" or "zero." For the challenge, accept "trapezoid" for Shape A only if the student specifies that it is non-isosceles.