

Corner Detectives

Sort quadrilaterals by their square corners.

4.MG.5.d.ii "Compare, contrast, and classify quadrilaterals (parallelograms, rectangles, squares, rhombi, and/or trapezoids) based on the following properties and attributes: perpendicular sides;"

NAME _____

DATE _____

HAS PERPENDICULAR SIDES

Perpendicular sides meet to make a square corner, called a right angle. A quadrilateral belongs here if it has at least one right angle.

A four-sided garden path has two sides that meet at a 90° corner.

NO PERPENDICULAR SIDES

No pair of sides meets to make a square corner. This quadrilateral has no right angles.

A four-sided sail has angles of 70° , 110° , 70° , and 110° .

1 SORT _____ 8 items

For each item, circle HAS RIGHT or NO RIGHT; in Part 2 PROVE IT, pick two items and explain how you knew.

- | | | |
|---|---------------------------------|--------------------------------|
| 1. A rectangle | ☐ HAS RIGHT | ☐ NO RIGHT |
| 2. A rhombus with 80° and 100° angles | ☐ HAS RIGHT | ☐ NO RIGHT |
| 3. A parallelogram with 75° and 105° angles | ☐ HAS RIGHT | ☐ NO RIGHT |
| 4. A square | ☐ HAS RIGHT | ☐ NO RIGHT |
| 5. A trapezoid with two adjacent right angles | ☐ HAS RIGHT | ☐ NO RIGHT |
| 6. A quadrilateral with three right angles | ☐ HAS RIGHT | ☐ NO RIGHT |
| 7. A rhombus with 60° and 120° angles | ☐ HAS RIGHT | ☐ NO RIGHT |
| 8. A rectangle rotated one-quarter turn | ☐ HAS RIGHT | ☐ NO RIGHT |

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 MAKE YOUR OWN: Write one new quadrilateral example for HAS RIGHT and one new quadrilateral example for NO RIGHT.

HAS RIGHT _____

NO RIGHT _____

CHALLENGE

Challenge: Draw a quadrilateral that has perpendicular sides but is not a rectangle. Mark one pair of perpendicular sides.

PART 1 • SORT

#	ITEM	CATEGORY	WHY
1	A rectangle	HAS RIGHT	A rectangle has four right angles, so adjacent sides are perpendicular.
2	A rhombus with 80° and 100° angles	NO RIGHT	Its angles are 80° or 100° , not 90° , so no sides are perpendicular.
3	A parallelogram with 75° and 105° angles	NO RIGHT	Its angles are 75° or 105° , not 90° , so no sides are perpendicular.
4	A square	HAS RIGHT	A square has four right angles, so it has perpendicular sides.
5	A trapezoid with two adjacent right angles	HAS RIGHT	The sides that meet at each right angle are perpendicular.
6	A quadrilateral with three right angles	HAS RIGHT	It already has right angles, so it has perpendicular sides.
7	A rhombus with 60° and 120° angles	NO RIGHT	Its angles are 60° or 120° , not 90° , so no sides are perpendicular.
8	A rectangle rotated one-quarter turn	HAS RIGHT	Turning a rectangle does not change its four right angles or its perpendicular sides.

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)

- **HAS RIGHT:** A quadrilateral with two adjacent 90° angles.
- **NO RIGHT:** A parallelogram with 85° and 95° angles.

Challenge: A right trapezoid with exactly one pair of parallel sides. Its left side is perpendicular to both parallel bases.

For Part 2, accept explanations that name a right angle or square corner for HAS RIGHT. For NO RIGHT, students should state that none of the angles is 90° , so no sides are perpendicular.