

Right Angle Detectives

Sort quadrilaterals by their angle properties.

7.MG.3.b.ii "Sort and classify quadrilaterals as parallelograms, rectangles, trapezoids, rhombi, and/or squares based on their properties: congruence of angle measures, side, and diagonal lengths; and"

NAME _____

DATE _____

RECTANGLE

A rectangle has four right angles, so all four angle measures are 90° . A square is also a rectangle because it has four right angles.

Each corner of a picture frame measures 90° , so the frame is a rectangle.

NOT A RECTANGLE

A quadrilateral in this category does not have four right angles. It may be a rhombus, a kite, or another type of quadrilateral.

A four-sided tile has angles of 65° , 115° , 65° , and 115° , so it is not a rectangle.

1 SORT _____ 8 items

For each quadrilateral, circle RECTANGLE or OTHER, then pick two items and explain which property proves each choice.

- | | | |
|---|---------------------------------|-----------------------------|
| 1. A quadrilateral has four 90° angles and congruent opposite sides. | ☐ RECTANGLE | ☐ OTHER |
| 2. A parallelogram has congruent diagonals. | ☐ RECTANGLE | ☐ OTHER |
| 3. A rhombus has four congruent sides and angles of 70° , 110° , 70° , and 110° . | ☐ RECTANGLE | ☐ OTHER |
| 4. A quadrilateral has angle measures of 90° , 90° , 90° , and 90° . | ☐ RECTANGLE | ☐ OTHER |
| 5. A quadrilateral has four congruent sides and angles of 60° , 120° , 60° , and 120° . | ☐ RECTANGLE | ☐ OTHER |
| 6. A quadrilateral has angle measures of 75° , 105° , 75° , and 105° . | ☐ RECTANGLE | ☐ OTHER |
| 7. A parallelogram has four congruent angles. | ☐ RECTANGLE | ☐ OTHER |
| 8. A quadrilateral has angle measures of 90° , 90° , 75° , and 105° . | ☐ RECTANGLE | ☐ OTHER |

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

Write one new quadrilateral description for RECTANGLE and one for OTHER. Include angle measures that prove each choice.

RECTANGLE _____

OTHER _____

CHALLENGE

A quadrilateral has four congruent sides and congruent diagonals. Which category does it belong in? Explain your reasoning.

PART 1 • SORT

#	ITEM	CATEGORY	WHY
1	A quadrilateral has four 90° angles and congruent opposite sides.	RECTANGLE	Four right angles make it a rectangle.
2	A parallelogram has congruent diagonals.	RECTANGLE	A parallelogram with congruent diagonals is a rectangle.
3	A rhombus has four congruent sides and angles of 70° , 110° , 70° , and 110° .	OTHER	Its angles are not all 90° .
4	A quadrilateral has angle measures of 90° , 90° , 90° , and 90° .	RECTANGLE	All four angles are right angles.
5	A quadrilateral has four congruent sides and angles of 60° , 120° , 60° , and 120° .	OTHER	Its angles are not all 90° .
6	A quadrilateral has angle measures of 75° , 105° , 75° , and 105° .	OTHER	Its angles are not all 90° .
7	A parallelogram has four congruent angles.	RECTANGLE	Four congruent angles in a quadrilateral must each measure 90° .
8	A quadrilateral has angle measures of 90° , 90° , 75° , and 105° .	OTHER	Only two angles are right angles.

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)

- **RECTANGLE:** A four-sided garden has angles of 90° , 90° , 90° , and 90° and side lengths of 6 m, 10 m, 6 m, and 10 m.
- **OTHER:** A parallelogram has angle measures of 88° , 92° , 88° , and 92° .

Challenge: RECTANGLE. Four congruent sides make it a rhombus, and congruent diagonals in a rhombus mean it is a square. A square has four right angles, so it is a rectangle.

Items 1, 2, 4, and 7 are RECTANGLE. Items 3, 5, 6, and 8 are OTHER. Accept proofs that cite four right angles for rectangles or identify an angle that is not 90° for other quadrilaterals.