

Quad Clue Quest

Use side and diagonal clues to classify quadrilaterals.

GRADE 7 • 7.MG.3.a.i

7.MG.3.a.i "Compare and contrast properties of the following quadrilaterals: parallelogram, rectangle, square, rhombus, and trapezoid: parallel/perpendicular sides and diagonals;"

NAME _____

DATE _____

READ THE CLUES

Check every clue before choosing a quadrilateral. Parallel sides never meet, and perpendicular segments form right angles. Use clues about opposite sides, corners, and diagonals together because one property can fit more than one shape.

WORKED EXAMPLE

A festival flag frame has opposite sides parallel. Every side has equal length, but its corners are not right angles. Name the quadrilateral.

1. Opposite sides parallel place the frame in the parallelogram family.
2. All sides having equal length narrows the choices to a rhombus or a square.
3. The corners are not right angles, so the frame is not a square.

Answer: rhombus

PRACTICE 6 problems

- 1** A quadrilateral has exactly one pair of parallel sides. Name the quadrilateral.

ANSWER _____

- 2** A frame has opposite sides parallel and every angle is a right angle. Which names from the list are guaranteed to fit it?

ANSWER _____

- 3** Are the diagonals of a rhombus parallel, perpendicular, or neither?

ANSWER _____

- 4** A rectangle is not a square. Are its diagonals perpendicular? Write yes or no.

ANSWER _____

- 5** A quadrilateral has congruent diagonals and perpendicular diagonals. It also has all sides equal. Name the quadrilateral.

ANSWER _____

- 6** State one property that both a rectangle and a rhombus must have. Then state one property a rectangle always has that a rhombus does not have to have.

ANSWER _____

APPLY IT Show your work

- 1** Jordan is designing a badge for the robotics team. The badge must have all sides equal, diagonals that meet at right angles, and no right-angle corners. Which quadrilateral should Jordan use?

WORK SPACE

ANSWER _____

- 2** A skateboard deck graphic has one pair of opposite edges that stay the same distance apart. The other pair of opposite edges is not parallel. What quadrilateral is the graphic, and how many pairs of parallel sides does it have?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A quadrilateral has both pairs of opposite sides parallel, four right angles, and congruent diagonals. List every name from the set parallelogram, rectangle, square, rhombus, and trapezoid that is guaranteed. Explain why square is not guaranteed.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A quadrilateral has exactly one pair of parallel sides. Name the quadrilateral.	trapezoid
2	A frame has opposite sides parallel and every angle is a right angle. Which names from the list are guaranteed to fit it?	rectangle and parallelogram
3	Are the diagonals of a rhombus parallel, perpendicular, or neither?	perpendicular
4	A rectangle is not a square. Are its diagonals perpendicular? Write yes or no.	no
5	A quadrilateral has congruent diagonals and perpendicular diagonals. It also has all sides equal. Name the quadrilateral.	square
6	State one property that both a rectangle and a rhombus must have. Then state one property a rectangle always has that a rhombus does not have to have.	Both have two pairs of parallel sides. A rectangle has four right angles, while a rhombus does not have to have four right angles.

PART 2 • APPLY IT

1. **rhombus** Equal sides and perpendicular diagonals fit a rhombus. The lack of right-angle corners rules out a square.
2. **trapezoid, one pair of parallel sides** A trapezoid has exactly one pair of parallel sides. The description says the other pair is not parallel.

CHALLENGE

parallelogram and rectangle. A square is not guaranteed because the clues do not say that all four sides are equal.

Accept equivalent wording for parallel and perpendicular properties. For the challenge, accept any clear explanation that the side lengths are unknown, so a square cannot be guaranteed.