MATHEMATICS · GRADES 4-6

Classifying quadrilaterals

Difficulty level: Intermediate

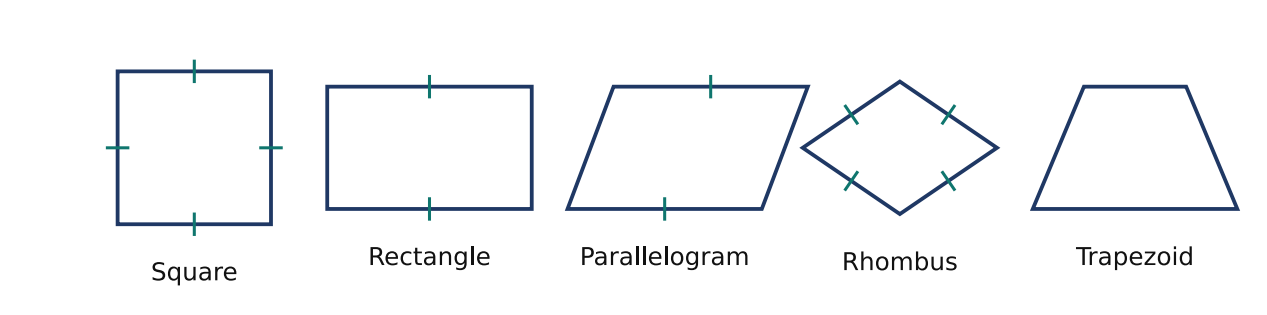
Mathematics: Grades 4-6

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Overview of the concept

This is how you name a four-sided shape, like a square, a rectangle, or a kite, by its sides and angles. The name tells you at a glance which sides match and which corners are square, so you know what is true about the shape before you measure anything. Builders and designers use these names every day to describe the shapes they are working with.





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Rule

Classifying quadrilaterals: name a four-sided shape by its sides and angles. A square has four equal sides and four right angles. A rectangle has opposite sides equal and four right angles. A parallelogram has both pairs of opposite sides parallel. A rhombus has four equal sides and no right angles.

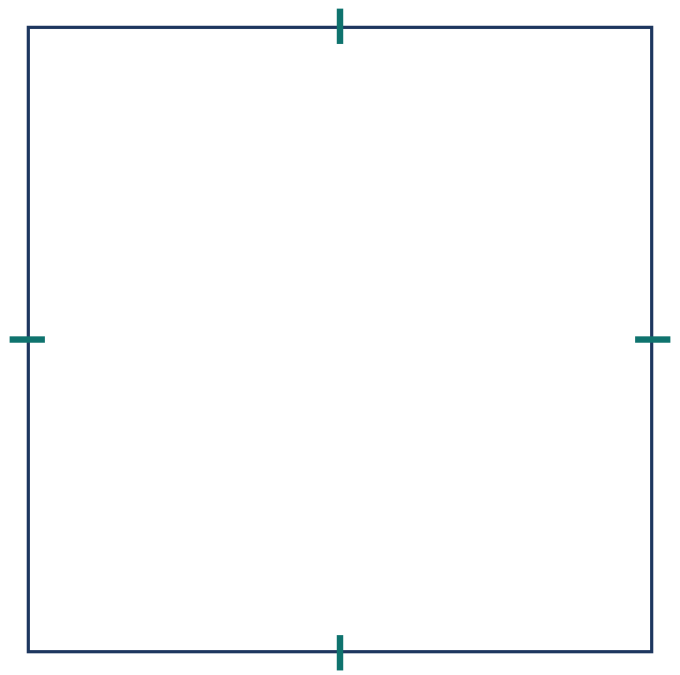
A trapezoid has exactly one pair of parallel sides. A kite has two pairs of adjacent sides equal. A square is also a rectangle, because its opposite sides are equal and its angles are right angles. If none of these patterns fits, the most specific name is quadrilateral.

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Worked examples

EXAMPLE 1

Q Classify a shape with 4 equal sides and 4 right angles



SOLUTION

Equal sides, right angles -> Square

Count the sides: four, all equal.

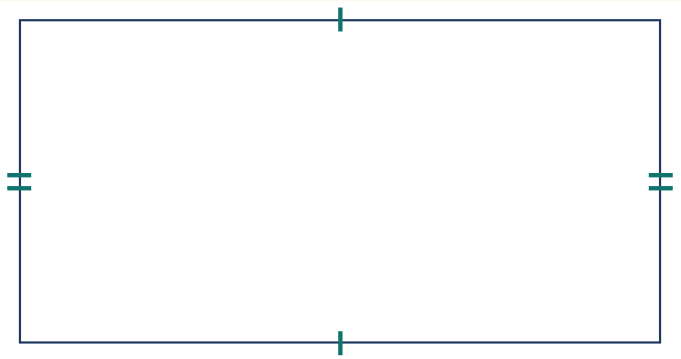
Check the angles: four right angles.

Four sides, all equal, with right angles: that makes it a square.

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EXAMPLE 2

Q Classify a shape with opposite sides equal and parallel, 4 right angles



SOLUTION

-> Rectangle

Check opposite sides: equal and parallel in both pairs.

Check the angles: four right angles.

Opposite sides equal with right angles, but not all sides equal, is a rectangle.

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Practice questions

1 A garden bed has four sides. Its opposite sides are equal and parallel, all four corners are right angles, but the sides are not all equal. What shape is the garden bed?

- **A** Square
- **B** Rectangle
- **C** Rhombus
- **D** Trapezoid

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2 Leo builds a kite. It has two pairs of adjacent sides that are equal. What is this shape called?

- **A** Rhombus
- **B** Parallelogram
- **C** Kite
- **D** Trapezoid

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3 A floor tile has four equal sides and four right angles. Name the shape of the tile.

- **A** Square
- **B** Rectangle
- **C** Rhombus
- **D** Kite

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4 A road sign is a four-sided shape with both pairs of opposite sides parallel, but it has no right angles. What shape is it?

- **A** Rectangle
- **B** Trapezoid
- **C** Rhombus
- **D** Parallelogram

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5 A shape has four sides, with one pair of parallel sides and the other pair not parallel. What shape is it?

- **A** Parallelogram
- **B** Trapezoid
- **C** Kite
- **D** Rhombus

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6 Every square is also a rectangle. Explain why.

- **A** A rectangle has four equal sides, so every rectangle is a square
- **B** A square has four right angles and opposite sides equal, so it meets the definition of a rectangle
- **C** A square has no parallel sides
- **D** A square's angles are not right angles

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7 **Ana draws a shape with four sides of different lengths and no parallel sides at all. What is the most specific name for her shape?**

A Trapezoid

B Kite

C Quadrilateral (general)

D Parallelogram

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8 **A rhombus has all four sides equal but no right angles. Is a rhombus a square? Explain.**

- **A** Yes, equal sides are all a square needs
- **B** No, a rhombus can never be a square
- **C** No, a square also needs four right angles
- **D** Yes, a rhombus is always a square

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9 **Which quadrilateral is NOT a parallelogram?**

- **A** Square
- **B** Rectangle
- **C** Rhombus
- **D** Trapezoid

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10 **Which quadrilateral has two pairs of parallel sides and four equal sides, but is not a square?**

A Rhombus

B Square

C Rectangle

D Kite

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ANSWER KEY

1. Rectangle

2. Kite

3. Square

4. Parallelogram

5. Trapezoid

6. A square has four right angles and opposite sides equal, so it meets the definition of a rectangle

7. Quadrilateral (general)

8. No, a square also needs four right angles

9. Trapezoid

10. Rhombus

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