Shape Categories

Spot mistakes, reason, and work backward

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Classify by attributes, not by how a shape is turned. A quadrilateral has 4 straight sides. A rectangle is a quadrilateral with 4 right angles. A rhombus is a quadrilateral with 4 equal sides. A shape can fit more than one rule.

Worked example

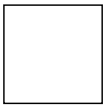
A shape has 4 straight sides, no right angles, and no equal sides. Which names fit: quadrilateral, rectangle, rhombus?

1. Count the sides: all 4 straight sides meet the quadrilateral rule.
2. It has neither 4 right angles nor 4 equal sides, so the other two categories do not fit.
Answer: Quadrilateral only.

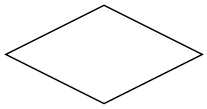
Practice Problems

Show your thinking.

1. A student says a square cannot be a rectangle. Use the shown square to correct the claim.

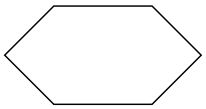


2. A student says every rhombus must be a square. Use this rhombus as a test.

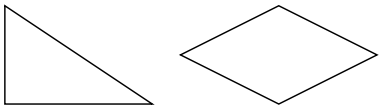


3. A mystery shape has 4 equal sides and 4 right angles. Name it, then give a broader category it belongs to.

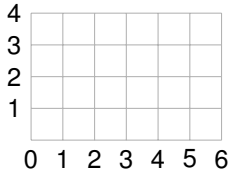
4. Name this shape and give two facts that support its category.



5. Sort these shapes into quadrilaterals and not quadrilaterals: square, triangle, pentagon, rhombus.



6. Draw a rectangle 4 grid units wide and 2 grid units tall. State two properties of your drawing.



Answer Key

1. A square is also a rectangle.
2. False; this rhombus has no right angles.
3. Square; also rectangle, rhombus, and quadrilateral.
4. Hexagon.
5. Quadrilaterals: square, rhombus. Not: triangle, pentagon.
6. A 4-by-2 rectangle; 4 sides and 4 right angles.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The square has 4 straight sides and 4 right angles.

2. A rectangle needs 4 right angles; the square meets that rule. Its 4 equal sides make it a special rectangle.

Problem 2

1. The shape has 4 equal sides, so it is a rhombus.

2. A square also needs 4 right angles. The shown corners are not right angles, so this rhombus is not a square.

Problem 3

1. The 4 equal sides meet the rhombus rule; the 4 right angles meet the rectangle rule.

2. Having both sets of attributes makes the shape a square. Its 4 sides also make it a quadrilateral.

Problem 4

1. It has 6 straight sides and 6 corners.

2. Its 6 sides make it a hexagon, not a quadrilateral.

Problem 5

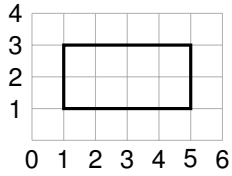
1. A square and a rhombus each have 4 sides, so both meet the quadrilateral rule.

2. A triangle has 3 sides and a pentagon has 5; neither has the required 4.

Problem 6

1. Draw two horizontal sides of length 4 and two vertical sides of length 2.

2. They meet at 4 right angles. Opposite sides match, and the two side lengths differ, so it is a nonsquare rectangle.



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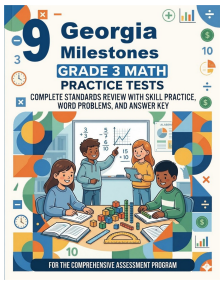

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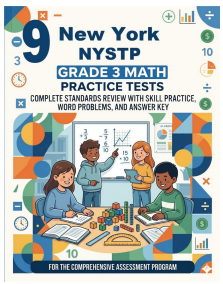

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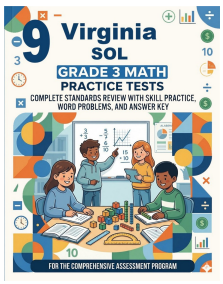

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