

# Classifying Two-Dimensional Figures

Grade 5 Math • Section 10.4

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 12

## Quick Review and Helpful Hints

👉 **Hierarchy of quadrilaterals:** Quadrilateral  $\supset$  Parallelogram  $\supset$  Rectangle  $\supset$  Square. Quadrilateral  $\supset$  Parallelogram  $\supset$  Rhombus  $\supset$  Square. Quadrilateral  $\supset$  Trapezoid.

👉 **Triangles:** By sides: equilateral (all equal), isosceles (2 equal), scalene (none equal). By angles: acute (all  $< 90^\circ$ ), right (one  $= 90^\circ$ ), obtuse (one  $> 90^\circ$ ).

💡 Figures can belong to more than one category. A square is a rectangle, rhombus, parallelogram, **and** quadrilateral.

🔍 **Example:** Classify a figure with 4 equal sides and 4 right angles. Name all categories it belongs to.

👉 Four equal sides makes it a rhombus. Four right angles makes it a rectangle. Both a rhombus and a rectangle means it is a square. It is also a parallelogram and a quadrilateral.

💡 **Answer:** Square, rectangle, rhombus, parallelogram, quadrilateral

## Practice Problems

Classify each figure. List all categories it belongs to.

- A shape has 4 sides, 2 pairs of parallel sides, and 4 right angles but sides are not all equal. \_\_\_\_\_
- A shape has 3 sides, all different lengths, and one  $90^\circ$  angle. \_\_\_\_\_
- A shape has 4 equal sides but no right angles. \_\_\_\_\_
- A shape has 4 sides and exactly one pair of parallel sides. \_\_\_\_\_
- A shape has 3 sides all the same length. \_\_\_\_\_
- Can a triangle be both right and isosceles? Explain. \_\_\_\_\_
- A shape has 4 sides, opposite sides parallel and equal, and no right angles. What is it? \_\_\_\_\_
- Is every square a rhombus? Is every rhombus a square? Explain. \_\_\_\_\_
- A triangle has sides of length 5 cm, 5 cm, and 8 cm. Classify it by sides. \_\_\_\_\_
- Name a quadrilateral that is NOT a parallelogram. \_\_\_\_\_

## Word Problems

- A city park is shaped like a quadrilateral with two pairs of parallel sides and all four angles are  $90^\circ$ , but not all sides are equal. What shape is the park? List all categories it belongs to. \_\_\_\_\_
- Draw or describe two different quadrilaterals that are both parallelograms but are NOT rectangles. What properties do they share? \_\_\_\_\_



## Answer Keys

- |                           |  |
|---------------------------|--|
| 1. rectangle              | 7. parallelogram                               |
| 2. right scalene triangle | 8. Yes; no                                     |
| 3. rhombus                | 9. isosceles triangle                          |
| 4. trapezoid              | 10. trapezoid                                  |
| 5. equilateral triangle   | 11. rectangle; quadrilateral and parallelogram |
| 6. Yes                    | 12. rhombus and slanted parallelogram          |

### Step-by-Step Explanations

1. Start with the main idea. For classifying 2-D figures, four right angles and two pairs of parallel sides make a rectangle; not all sides equal means it is not a square. Use the properties one at a time: sides, angles, and parallel sides.
2. Keep the work tidy. For classifying 2-D figures, it has one right angle and all side lengths are different. A shape can belong to more than one category when it satisfies more than one definition.
3. Look at what the numbers mean. For classifying 2-D figures, four equal sides with no right angles describes a rhombus. Counterexamples are useful: one shape that breaks a claim shows the claim is not always true.
4. Use the setup first. For classifying 2-D figures, exactly one pair of parallel sides describes a trapezoid. Use the properties one at a time: sides, angles, and parallel sides.
5. Check the size of the answer. For classifying 2-D figures, all three sides have the same length. A shape can belong to more than one category when it satisfies more than one definition.
6. Match the operation to the words. For classifying 2-D figures, a right isosceles triangle can have a  $90^\circ$  angle and two equal legs. Counterexamples are useful: one shape that breaks a claim shows the claim is not always true.
7. Write the important values first. For classifying 2-D figures, opposite sides

parallel and equal describes a parallelogram; no right angles means not a rectangle. Use the properties one at a time: sides, angles, and parallel sides.

8. Follow the pattern carefully. For classifying 2-D figures, every square has four equal sides, so it is a rhombus; a rhombus does not need four right angles. A shape can belong to more than one category when it satisfies more than one definition.

9. Start with the main idea. For classifying 2-D figures, two sides are equal: 5 cm and 5 cm. Counterexamples are useful: one shape that breaks a claim shows the claim is not always true.

10. Keep the work tidy. For classifying 2-D figures, a trapezoid is a quadrilateral but not a parallelogram. Use the properties one at a time: sides, angles, and parallel sides.

11. Look at what the numbers mean. For classifying 2-D figures, two pairs of parallel sides and four right angles make it a rectangle, which is also a parallelogram and quadrilateral. A shape can belong to more than one category when it satisfies more than one definition.

12. Use the setup first. For classifying 2-D figures, both have two pairs of parallel opposite sides, but they do not have four right angles. Counterexamples are useful: one shape that breaks a claim shows the claim is not always true.



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