

Name \_\_\_\_\_

# Classify Quadrilaterals

**Essential Question** How can you sort and classify quadrilaterals?

Common Core Geometry—  
4.G.A.2

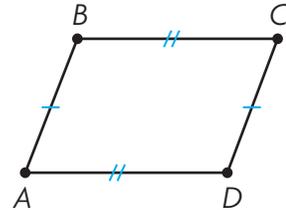
**MATHEMATICAL PRACTICES**  
MP2, MP4, MP6

## Unlock the Problem

A quadrilateral is a polygon with four sides and four angles. You can name a quadrilateral by the vertices of its angles.

Quadrilateral  $ABCD$  is a possible name for the figure shown at the right. Quadrilateral  $ACBD$  is not a possible name, since points  $A$  and  $C$  are not endpoints of the same side.

Assume that line segments that appear to be parallel are parallel.



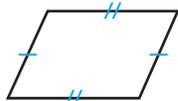
The tick marks on the line segments show that they have the same length. Sides  $AD$  and  $BC$  have the same length. Sides  $AB$  and  $CD$  have the same length.

### Common Quadrilaterals



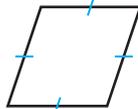
**Trapezoid**

- 1 pair of parallel sides



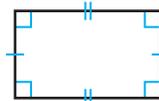
**Parallelogram**

- 2 pairs of parallel sides
- 2 pairs of sides of equal length



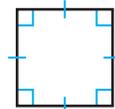
**Rhombus**

- 2 pairs of parallel sides
- 4 sides of equal length



**Rectangle**

- 2 pairs of parallel sides
- 2 pairs of sides of equal length
- 4 right angles



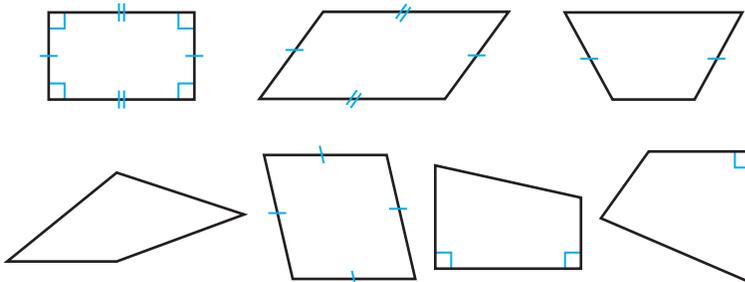
**Square**

- 2 pairs of parallel sides
- 4 sides of equal length
- 4 right angles

### **Activity 1** Identify right angles in quadrilaterals.

**Materials** ■ color pencils

Use the Quadrilateral Color Guide to color the quadrilaterals.



#### Quadrilateral Color Guide

<b>RED:</b>	exactly 4 right angles
<b>BLUE:</b>	exactly 2 right angles
<b>ORANGE:</b>	exactly 1 right angle

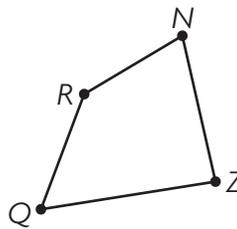
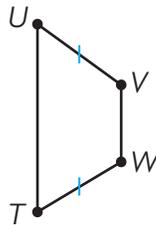
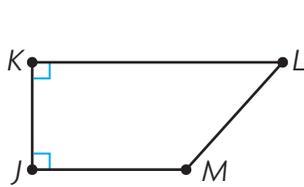
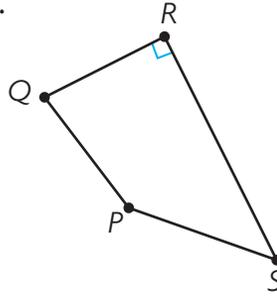
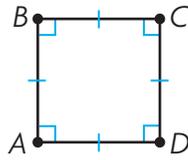
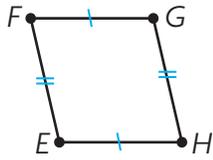
**Math Talk**

**MATHEMATICAL PRACTICES 6**

Can a quadrilateral have exactly 3 right angles? **Explain.**

**Activity 2** Use a Venn diagram to sort quadrilaterals.

Write the names of the quadrilaterals in the Venn diagram.



**Quadrilaterals**

Exactly 1 Pair of Parallel Sides

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No Parallel Sides

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2 Pairs of Parallel Sides

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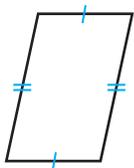
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**Try This!** Classify each figure as many ways as possible. Write *quadrilateral, trapezoid, parallelogram, rhombus, rectangle, or square.*

a.




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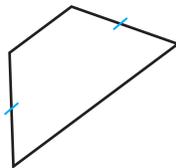


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b.




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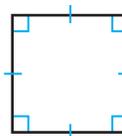


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c.




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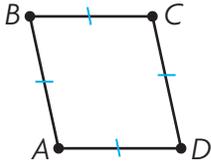
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Name \_\_\_\_\_

## Share and Show



1. Tell whether the quadrilateral is also a trapezoid, parallelogram, rhombus, rectangle, or square.

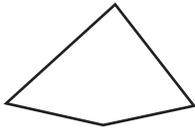


Think: \_\_\_\_\_ pairs of parallel sides  
\_\_\_\_\_ sides of equal length  
\_\_\_\_\_ right angles

Quadrilateral  $ABCD$  is also a \_\_\_\_\_.

Classify each figure as many ways as possible. Write *quadrilateral, trapezoid, parallelogram, rhombus, rectangle, or square*.

2.

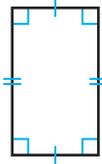


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3.

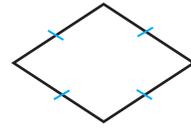


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4.



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**Math Talk**

### MATHEMATICAL PRACTICES 2

**Use Reasoning** How would you classify a figure with 4 sides, none of which are parallel? Explain.

## On Your Own

Classify each figure as many ways as possible. Write *quadrilateral, trapezoid, parallelogram, rhombus, rectangle, or square*.

5.

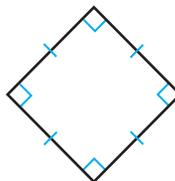


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6.

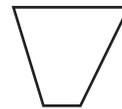


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7.



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# Problem Solving • Applications



8. **THINK SMARTER** Explain how a rhombus and square are alike, and how they are different.




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9. **THINK SMARTER** Classify the figure. Select all that apply.

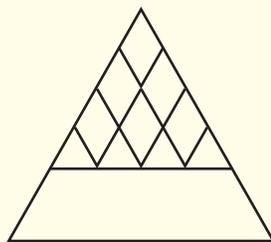


- |                                     |                                 |
|-------------------------------------|---------------------------------|
| <input type="radio"/> quadrilateral | <input type="radio"/> rectangle |
| <input type="radio"/> trapezoid     | <input type="radio"/> rhombus   |
| <input type="radio"/> parallelogram | <input type="radio"/> square    |

## Connect to Art

The Louvre Museum is located in Paris, France. Architect I. M. Pei designed the glass and metal structure at the main entrance of the museum. This structure is called the Louvre Pyramid.

Below is a diagram of part of the entrance to the Louvre Pyramid.



10. **MATHEMATICAL PRACTICE 1** Describe the quadrilaterals you see in the diagram.

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11. **GO DEEPER** How many triangles do you see in the diagram? Explain.

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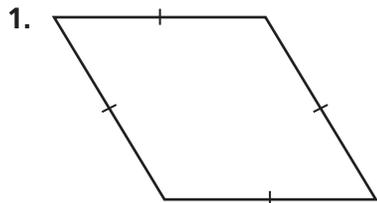
Name \_\_\_\_\_

### Classify Quadrilaterals



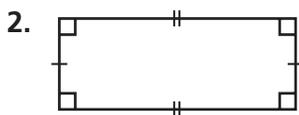
**COMMON CORE STANDARD—4.G.A.2**  
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Classify each figure as many ways as possible. Write *quadrilateral, trapezoid, parallelogram, rhombus, rectangle, or square*.



**Think:** 2 pairs of parallel sides  
4 sides of equal length  
0 right angles

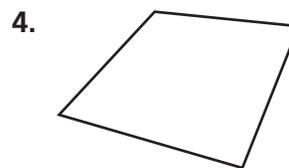
quadrilateral, parallelogram, rhombus



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Problem Solving



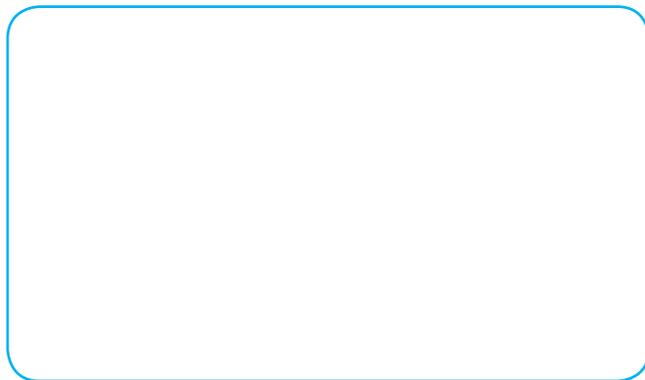
5. Alan drew a polygon with four sides and four angles. All four sides are equal. None of the angles are right angles. What figure did Alan draw?

\_\_\_\_\_  
\_\_\_\_\_

6. Teresa drew a quadrilateral with 2 pairs of parallel sides and 4 right angles. What quadrilateral could she have drawn?

\_\_\_\_\_  
\_\_\_\_\_

7. **WRITE** *Math* Draw and label an example of each type of quadrilateral: trapezoid, parallelogram, rhombus, rectangle, and square.



## Lesson Check (4.G.A.2)

1. Joey is asked to name a quadrilateral that is also a rhombus. What should be his answer?
2. What quadrilateral has exactly one pair of parallel sides?

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## Spiral Review (4.OA.B.4, 4.OA.C.5, 4.NF.B.3d, 4.G.A.1)

3. Terrence has 24 eggs to divide into equal groups. What are all the possible numbers of eggs that Terrence could put in each group?
4. In a line of students, Jenna is number 8. The teacher says that a rule for a number pattern is *add 4*. The first student in line says the first term, 7. What number should Jenna say?

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5. Lou eats  $\frac{6}{8}$  of a pizza. What fraction of the pizza, in simplest form, is left over?
6. Name a capital letter that appears to have parallel lines.

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