

# Classifying Quadrilaterals

---

<b>Strand:</b>	Geometry
<b>Topic:</b>	Compare and contrast the properties of quadrilaterals
<b>Primary SOL:</b>	7.6 The student will a) compare and contrast quadrilaterals based on their properties

## Materials

- Baggies
- Card stock
- Quadrilateral Sorting Shapes (attached)
- Quadrilateral Sorting Labels (attached)
- Quadrilateral Notes activity sheet (attached)
- Quadrilateral Family Tree activity sheet (attached)

## Vocabulary

*diagonal, leg, opposite, parallel, parallelogram, quadrilateral, rectangle, rhombus, square, symmetry, trapezoid* (earlier grades)  
*bisect* (7.6)

## Student/Teacher Actions: What should students be doing? What should teachers be doing?

1. Before the lesson, make multiple copies of the attached Quadrilateral Sorting Labels, including blank labels, and Quadrilateral Sorting Shapes on card stock. Cut out the labels and shapes. Make one set of labels and shapes for each pair of students.
2. Review the types of polygons by displaying a triangle, quadrilateral, pentagon, and hexagon and having students name and describe characteristics of each shape.
3. Put students into pairs, and give each pair a baggie containing a set of quadrilateral sorting labels and a set of quadrilateral sorting shapes. Ask partners to examine and analyze the shapes. Challenge them to think of a category into which all of the shapes will fit (quadrilateral).
4. Instruct students to sort the shapes according to their attributes. Have them use the labels to help them sort. Blank labels are provided for students to create categories of their own. Allow students to describe the categories they created.
5. Display the names of the quadrilateral shapes—parallelogram, rectangle, rhombus, square, and trapezoid—and ensure that all students know and understand them. You might display a large drawing of each quadrilateral next to its name.
6. Distribute the Quadrilateral Notes activity sheet, and complete the notes as a class. Have discussions about the attributes of each shape. The names of the shapes may appear in one category.
7. Have students use what they have learned about quadrilaterals to complete the Quadrilateral Family Tree activity sheet and answer the questions that follow using always, sometimes, or never.

## Assessment

- **Questions**
  - How did you decide where to put each quadrilateral sorting shape?
  - How else could you sort these quadrilaterals?
  - Which shapes have similar attributes? What are their similar attributes? How do you know?
  - Can a quadrilateral shape belong to more than one subset of quadrilaterals? Why, or why not? How do you know?
- **Journal/writing prompts**
  - Describe the three ways in which you can classify quadrilaterals by their attributes. Give examples.
  - Explain why all squares are rectangles but not all rectangles are squares.
  - Explain the relationships among a rectangle, a rhombus, and a square. Create a graphic organizer to show the relationships
- **Other Assessments**
  - Given an attribute, ask students to locate all of the quadrilaterals that have that attribute.
  - Given a shape, ask students to provide all names that apply to the shape.
  - Use the Quadrilateral Notes activity sheet as an assessment.

## Extensions and Connections

- Have students find practical uses for quadrilaterals.
- Have students create a poster or drawing that includes drawings and characteristics of the five quadrilaterals.
- Have students create a design or picture, using only quadrilaterals.
- Have students create a story, poem, or graphic organizer that illustrates the relationships among the quadrilaterals.

## Strategies for Differentiation

- Use flashcards to review the name and the figure of each quadrilateral.
- Provide drawings for students to glue in the “Drawing” boxes on the Quadrilateral Notes activity sheet instead of having them draw each shape.
- Provide students with string to make sorting circles.
- Assign specific sorting labels for students to use when sorting quadrilaterals.
- Allow students to orally answer one of the Journal/writing Prompts.

**Note: The following pages are intended for classroom use for students as a visual aid to learning.**

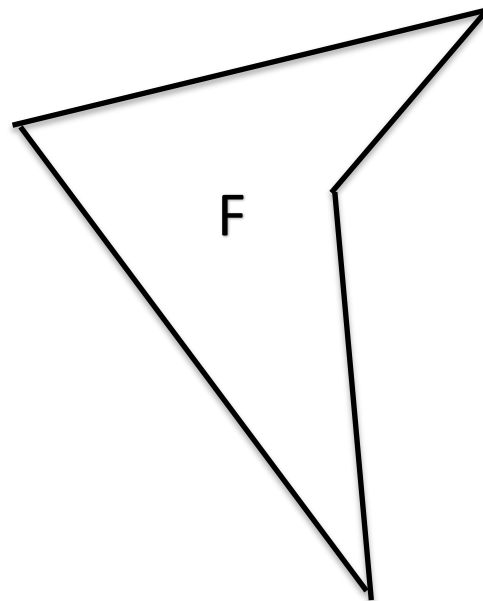
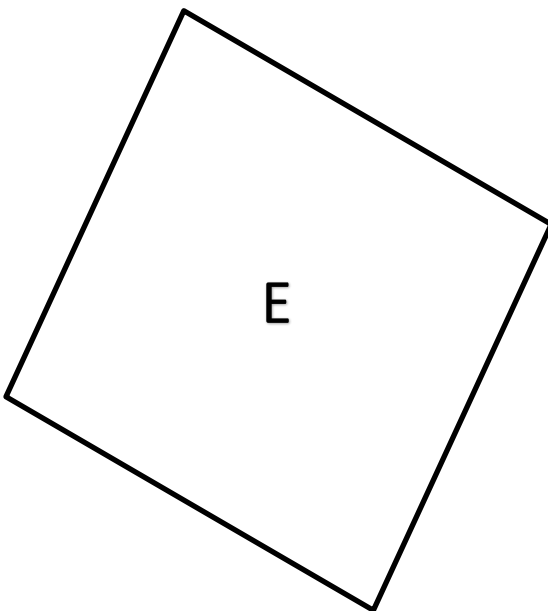
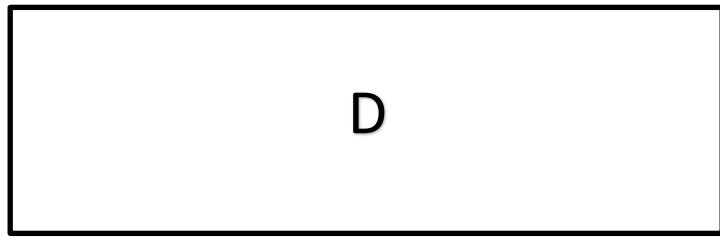
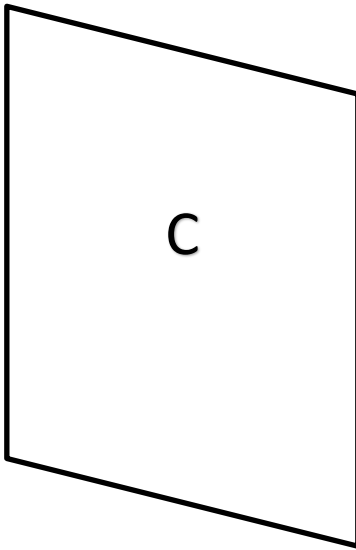
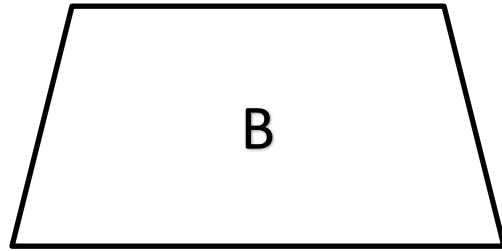
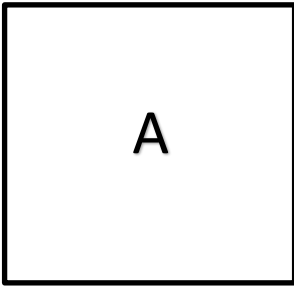
## Quadrilaterals Sorting Labels

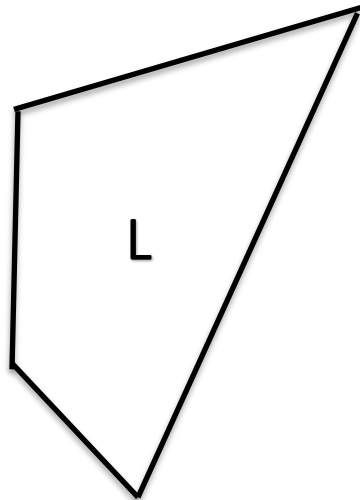
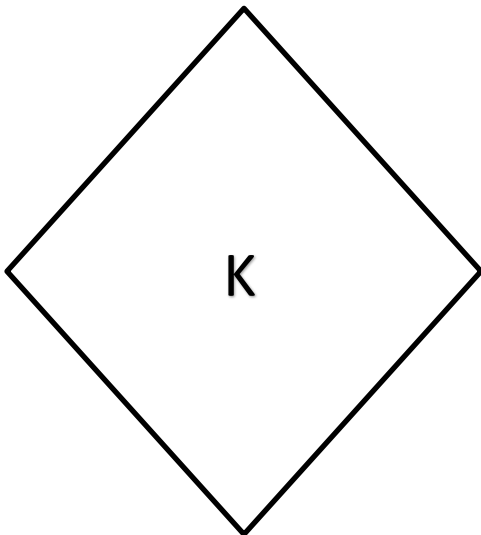
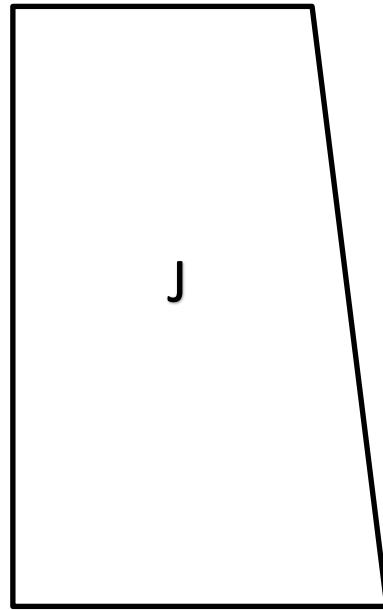
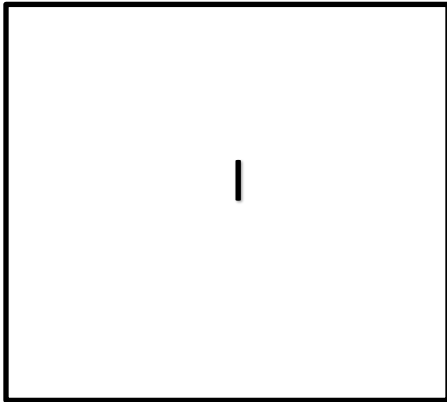
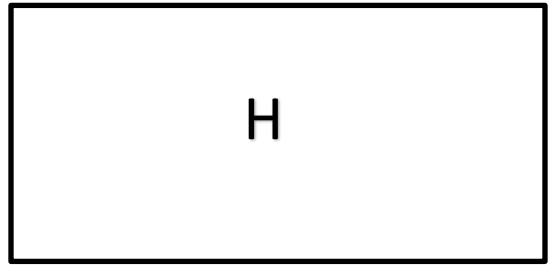
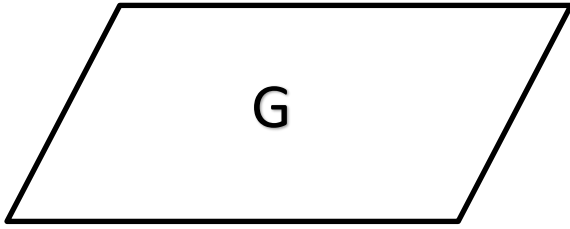
(Copy on card stock and cut out)

Has four sides and four angles
Has four right angles
Opposite angles are congruent
Has four congruent sides
Has two pairs of congruent sides
Opposite sides are parallel and opposite angles are congruent
Opposite sides are parallel
Has one pair of parallel sides
One pair of opposite angles is congruent
Has two pairs of parallel sides
Has no parallel sides
Has no right angles
Has one or two right angles
Has at least one line of symmetry
Has no lines of symmetry
Diagonals are congruent and bisect each other
Diagonals are congruent and bisect each other at right angles

## Quadrilaterals Sorting Shapes

(Copy on card stock and cut out)





## Quadrilateral Notes

Name \_\_\_\_\_

Fill in the boxes below with the appropriate names of the quadrilateral shapes.

<u>Sides</u>		
<i>Has four sides</i>		
<u>Number of Parallel Sides</u>		
<i>No Parallel Sides</i>	<i>One Pair of Parallel Sides</i>	<i>Two Pairs of Parallel Sides</i>
<u>Measure of the Angles</u>		
<i>No 90° Angles</i>	<i>One or Two 90° Angles</i>	<i>Four 90° Angles</i>
<u>Number of Congruent Sides</u>		
<i>No Sides Congruent</i>	<i>Two Pairs of Congruent Sides</i>	<i>All Four Sides Congruent</i>
<u>Lines of Symmetry</u>		
<i>No Lines of Symmetry</i>	<i>Two Lines of Symmetry</i>	<i>Four lines of Symmetry</i>
<u>Diagonals</u>		
<i>Diagonals are congruent and bisect each other</i>	<i>Diagonals are congruent and bisect each other at right angles</i>	<i>Diagonals bisect each other and one diagonal divides the figure into two congruent triangles</i>

## Quadrilateral Notes

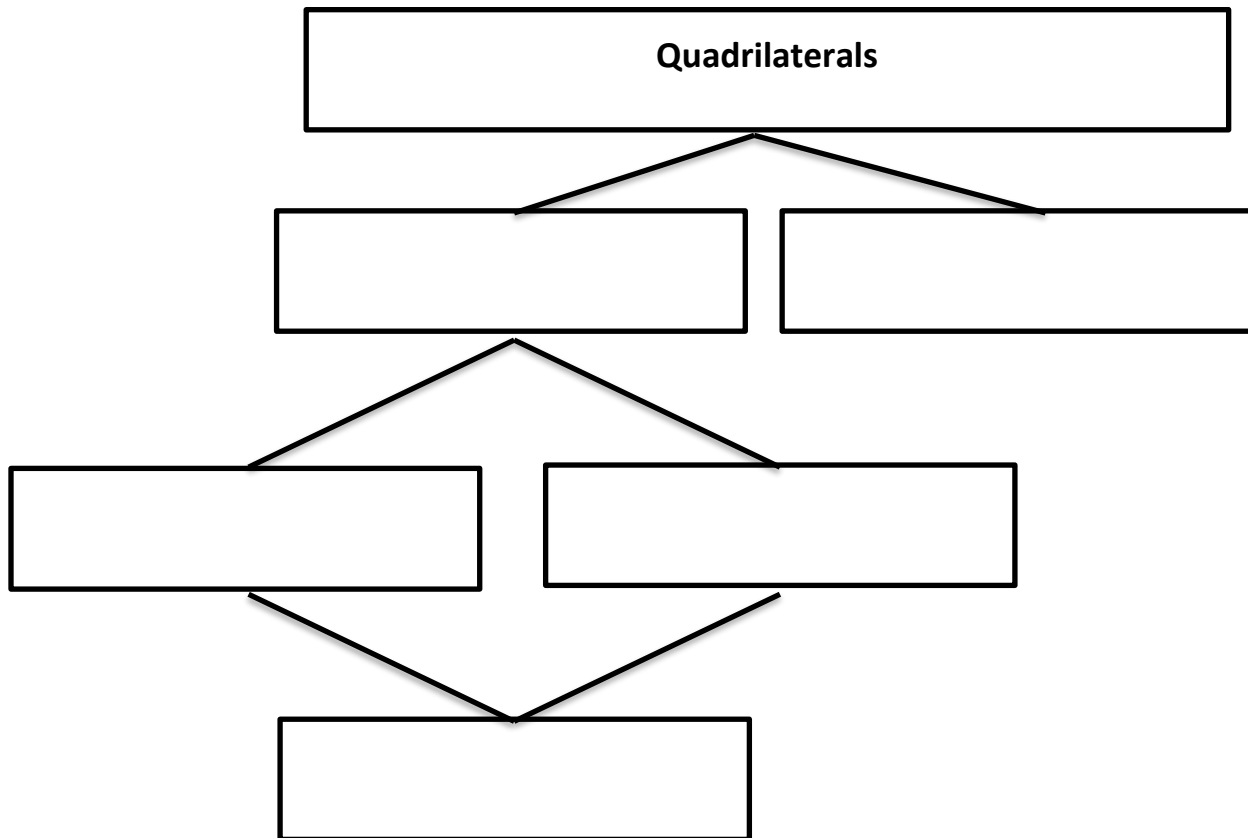
Name \_\_\_\_\_

Fill in the boxes below.

<b>Name of Quadrilateral</b>	<b>Description</b>	<b>Drawing</b>

## Quadrilateral Family Tree

**Directions:** Complete the family tree using the words parallelogram, rhombus, square, rectangle, and trapezoid.



Circle always, sometimes, or never to complete the following sentences.

1. A rectangle is _____ a quadrilateral.	always	sometimes	never
2. A trapezoid is _____ isosceles.	always	sometimes	never
3. A quadrilateral is _____ a rhombus.	always	sometimes	never
4. A square is _____ a rectangle.	always	sometimes	never
5. A trapezoid is _____ a parallelogram.	always	sometimes	never
6. A rhombus is _____ a quadrilateral.	always	sometimes	never
7. A trapezoid is _____ a rectangle.	always	sometimes	never