

# Quadrilateral Pretenders: Classifying Quadrilaterals

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**Description:** Students drag edges and vertices of various Sketchpad quadrilaterals to discover which are constructed to have specific characteristics. As they make distinctions on the basis of characteristics, they deepen their understanding of the definitions of various quadrilaterals, their properties, and the relationships among them.

**Technology Strength:** Dragging quadrilaterals that have been constructed using different properties provides students a visual and tactile experience of those properties. As students see which aspects of various quadrilaterals remain constant and which can change, they gain a deeper understanding of their definitions and relationships. Students gain an appreciation for the hierarchy of quadrilaterals by being able to manipulate one type of quadrilateral into what appears to be another type.

**Objectives:** Review properties of quadrilaterals: square, rectangle, rhombus, parallelogram, trapezoid, isosceles trapezoid, and kite; use specific definitions, including right quadrilateral and right trapezoid; understand the hierarchy of quadrilateral classification; use knowledge of properties to create specific shapes that pass the drag test

**Prerequisites:** Knowledge of definitions of specific quadrilaterals

**Suggested Grade Level:** 7 to 10

**Sketchpad Level:** Beginning

**Suggested Duration:** 45 minutes. The time can be extended for students to do their own constructions.

**Suggested Classroom Setting:** Whole Class, Student Pairs. This activity, designed for use by student pairs, can be easily modified for whole-class use.

**Preparation:** Review the Activity Notes. Preview the student sketch. Work through the steps on the worksheet and make a copy of the worksheet for each student. See the presentation sketch for an example of completed student work.

**Materials:** None

**Student Worksheet(s):** Quadrilateral Pretenders

**Student Sketch:** Quadrilateral Pretenders.gsp

**Presentation Sketch:** Quad Pretenders Present.gsp

**Vocabulary:** Quadrilateral, trapezoid, parallelogram, rhombus, rectangle, square, kite, isosceles, right, side, angle

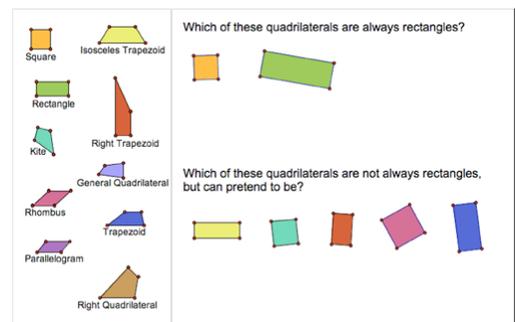
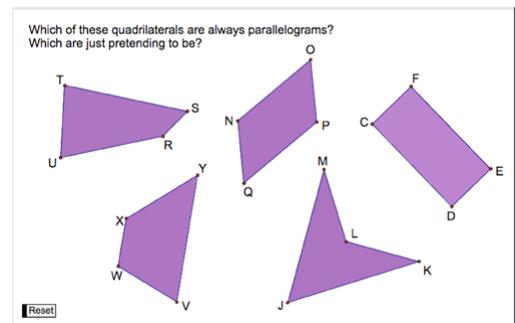
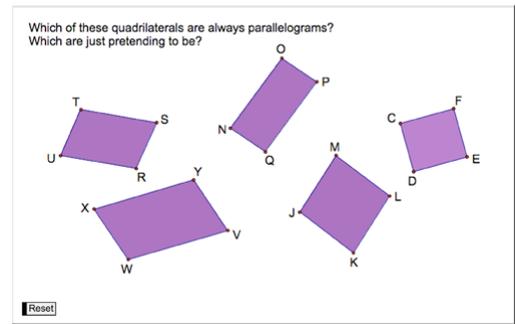
**Sketchpad Version:** GSP5

## Using the Sketch:

The page “Parallelogram Pretenders” shows five shapes that look like parallelograms, as shown in the first illustration. As students drag the vertices, they find that some of these shapes remain parallelograms while others do not, as shown in the second illustration. In addition to differentiating those shapes that are always parallelograms from those that can pretend to be, students are also asked to match each shape to its most specific name.

On the next three pages, students repeat this process for groups of shapes that look like rhombuses, trapezoids, and squares. They use the drag test to identify the shapes that are constructed to be what they originally appear to be, and to describe and name the pretenders.

On the page “Rectangles,” students identify the shapes that are constructed to always be rectangles, and those that can pretend to be. They manipulate the pretenders to look like rectangles, as shown in the third illustration. On the next two pages, students repeat this process for parallelograms and trapezoids.



## Sketch Tips:

Sketch Tips show skills needed in this activity, and the step at which the skill is first used.

Sketch Tip	Tip Sheet or Tip Video
Step 1: Change to a different page using page tabs	Moving Between Pages
Step 1: Select, deselect, and drag objects with the <b>Arrow</b> tool	Using the Arrow Tool