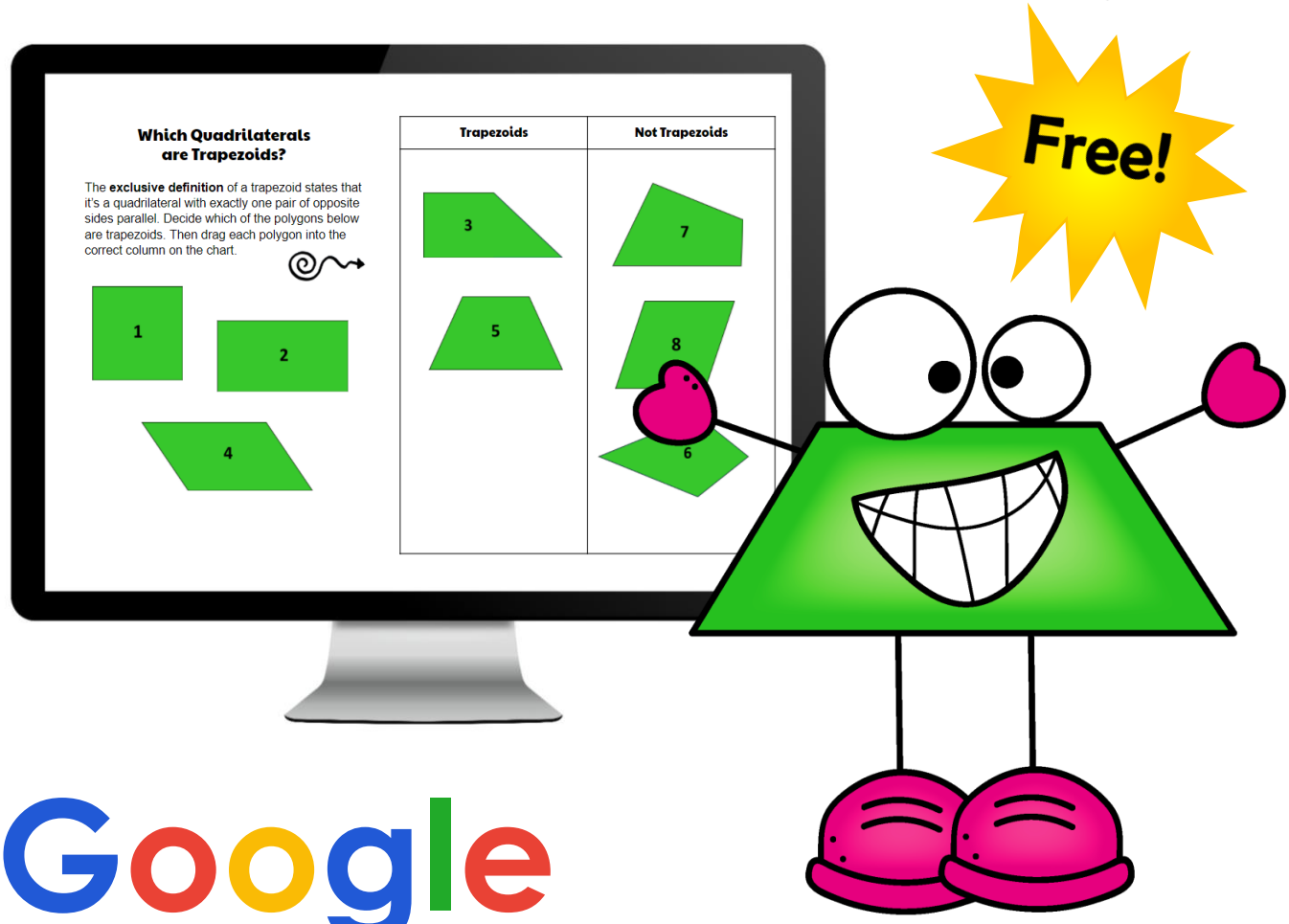
Sorting Tricky Trapezoids (or Trapeziums)

Hands-on Lesson and Google Slides Activity



Google Classroom

Laura Candler

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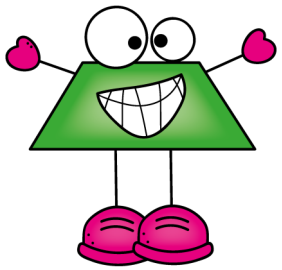
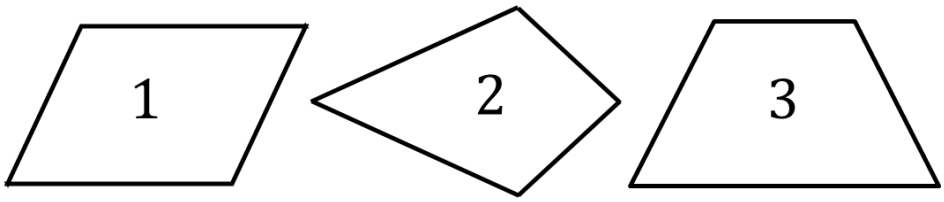


by Laura Candler

Did you know that there are THREE ways to define a trapezoid, or a trapezium as this polygon is classified in many countries? More importantly, do you know which definition you're supposed to be teaching? In this freebie, I'll explain all three definitions, and I'll share two quadrilateral sorting activities for exploring the attributes of trapezoids or trapeziums. One is a printable hands-on activity for partners, and the other is a digital Google Slides activity. If you're using Google Classroom, the most effective strategy is to start with the printable partner activity and assign the Google Slides activity later for independent practice or as a formative assessment.

Trapezoids and Trapeziums Defined

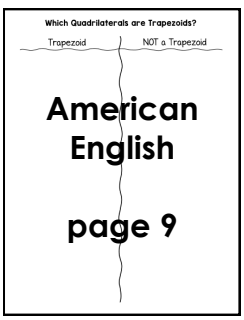
Americans teach one of two trapezoid definitions, either inclusive or exclusive, depending on their curriculum. Furthermore, the British English term for what Americans call a trapezoid is a trapezium, and they define a trapezoid as a quadrilateral with NO parallel sides! Before I explain each definition, answer this question: Which of these quadrilaterals are trapezoids?

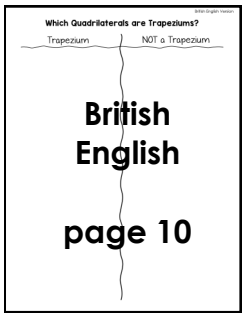


How you answer will depend on the way you define a trapezoid. All three definitions state that a trapezoid is a type of quadrilateral, but here's how the meanings differ:

- **American "exclusive" definition** – A **trapezoid** has EXACTLY one set of parallel sides (only 3)
- **American "inclusive" definition** – A **trapezoid** has AT LEAST one set of parallel sides (1 and 3)
- **British English definition** – A **trapezium** has EXACTLY one set of parallel sides (only 3), and a **trapezoid** has NO parallel sides (only 2).

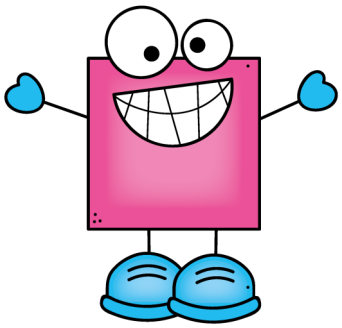
Because I'm an American, I used the word "trapezoid" rather than "trapezium" in most places in this teacher's guide. However, I created two versions of the T-chart to make the lesson easy for others to adapt. The British English version has the categories, "Trapezium" and "Not a Trapezium." Be sure to print the correct one!





Which definition SHOULD you be teaching?

Don't assume that the definition you're supposed to be teaching is the one you learned when you were in school. Until recently, I didn't realize that the Common Core State Standards use the inclusive definition for trapezoids. In fact, up until that point, I didn't even know there was another definition of a trapezoid! So if you aren't 100% sure, take time to find out before you introduce trapezoids to your students.

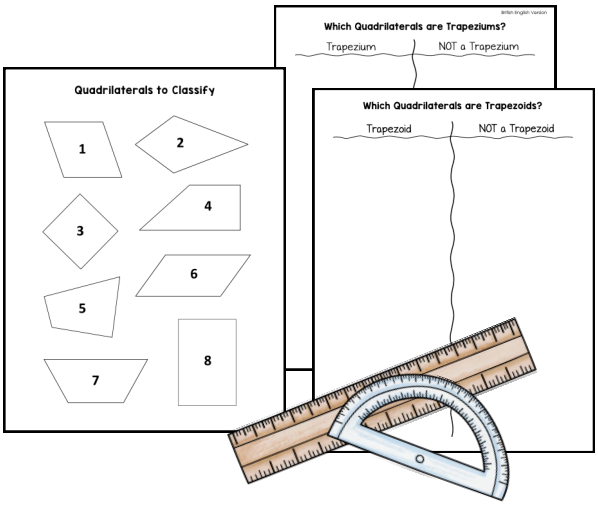


Sorting Tricky Trapezoids (or Trapeziums)

Because trapezoids are so tricky, it's worth spending a little extra time on them when you teach quadrilaterals. One of the best ways to help students master trapezoid classification is to have them sort quadrilaterals into two categories: "Trapezoid" and "Not a Trapezoid." Start with the teacher-guided hands-on lesson below, and if you use Google Classroom, you can assign the Google Slides version of the activity later for extra practice or as an assessment.

Activity #1 – Trapezoid or Trapezium Sorting Partner Activity

Before the lesson, print one page of quadrilaterals and one T-chart for every two students. Be sure to print the T-chart that includes the terminology you teach. The American version is on page 9 and the British English version is on page 10. It's best to print the T-chart and quadrilaterals on different colors of paper. This will make the shapes easier to see when they're placed on the T-chart. It's also helpful if your students have a ruler and a protractor for measuring the sides and angles of the shapes.



Step by Step Lesson Directions

1. Begin by explaining that a trapezoid (or trapezium) is a special type of quadrilateral. Briefly describe the attributes according to the definition used by your curriculum. Unless you're required to teach more than one definition, you probably shouldn't mention that there's more than one definition because you'll confuse them with unnecessary information.

2. Next, pair students with a partner and give them one page of quadrilaterals. Assign them the roles of Partner A and Partner B, and ask them to cut out the shapes and stack them in a pile.

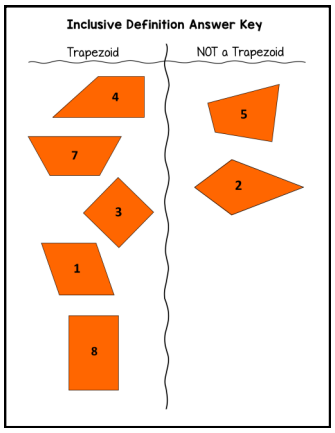
3. Explain that they will take turns sorting the quadrilaterals using a T-chart titled. Give each pair a copy of the T-chart or have one person in each pair draw the T-chart on a dry erase board.

4. To begin the sorting activity, ask Partner A to randomly pick up any quadrilateral and place it in the correct column on the T-chart. Partner A then explains the quadrilateral's placement to Partner B who gives a thumbs up if he or she agrees. If Partner B does not agree, the two students should discuss the placement of the quadrilateral and move it to the other column if needed. Remind them to use the ruler and/or protractor if they need to measure the sides and angles of the polygon.

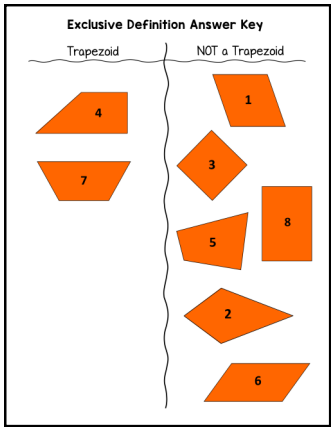
5. Partner B then chooses another quadrilateral, places it in the correct column on the chart, and justifies its placement to Partner A. Partner A must approve the placement, or the two students discuss the definition and place it correctly before continuing.

6. Students continue to switch roles throughout the activity. If they can't agree on the placement of one of the quadrilaterals, they should set it aside for the time being.

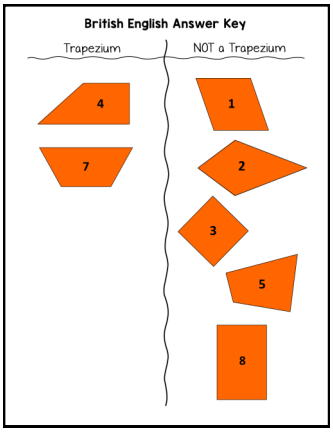
7. As students are working, walk around and observe them to see if they are classifying the quadrilaterals correctly. Stop to help students who are confused or who can't agree on the placement of one or more quadrilaterals. Wrap up the lesson by discussing the correct answers together as a class. The correct answers are given below.



Inclusive Definition



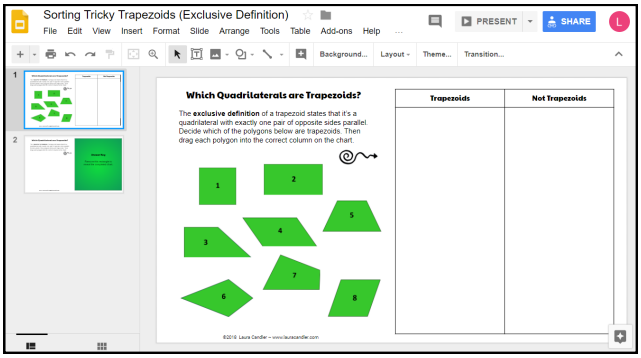
Exclusive Definition



British English

Activity #2 – Sorting Tricky Trapezoids or Trapeziums (Google Slides Activity)

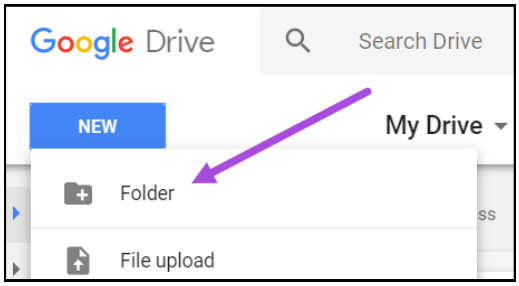
The Google Slides sorting activity can be used after the partner activity for independent practice or as an assessment. The shapes on the slides are slightly different from the ones on the printables, so your students will have to look at each shape carefully in order to classify it. Full directions for assigning the activity in Google Classroom can be found on the next 3 pages.



How to Create an Editable Copy of the Google Slides Activity*

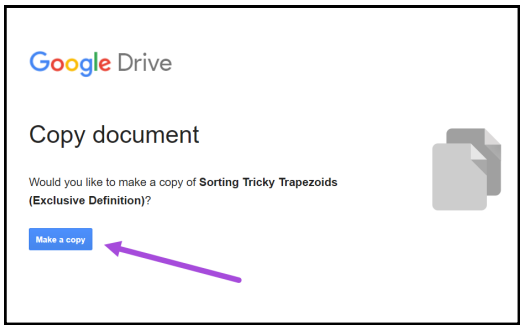
1. Create a Google Drive folder for storing documents.

Log on to your Google Drive, click NEW, and create a folder called **Tricky Trapezoids**.



2. Make a copy of the Sorting Tricky Trapezoids activity.

Click the link to the version of **Sorting Tricky Trapezoids** that matches the definition you teach. Then click **Make a copy**, and an editable copy will be created and saved in your Google Drive. By the way, I don't recommend making a copy of the other two versions of the activity because you might accidentally assign the wrong one later.

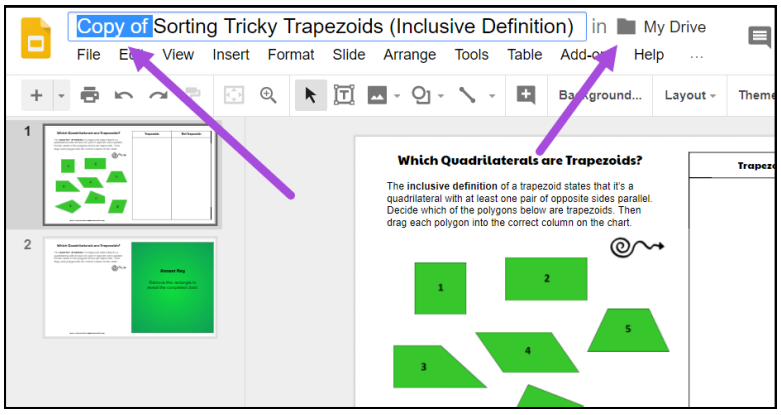


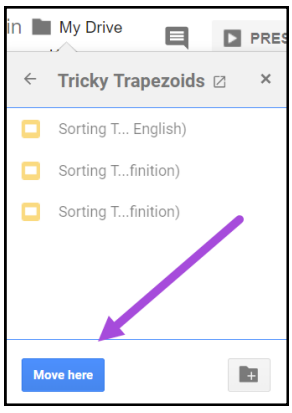
Tricky Trapezoids / Trapeziums Google Slides Links

- Exclusive definition - Exactly 1 pair of sides parallel
- Inclusive definition - At least 1 pair of sides parallel
- British English version - Sorting trapeziums

3. Rename the document and move it into the Tricky Trapezoids folder.

After the file opens, click the title field at the top and delete the words "Copy of." Then, click the folder icon that's just to the right of the title, and navigate to the Tricky Trapezoids folder that you created in step 1. Click **Move here** to move it into that folder.



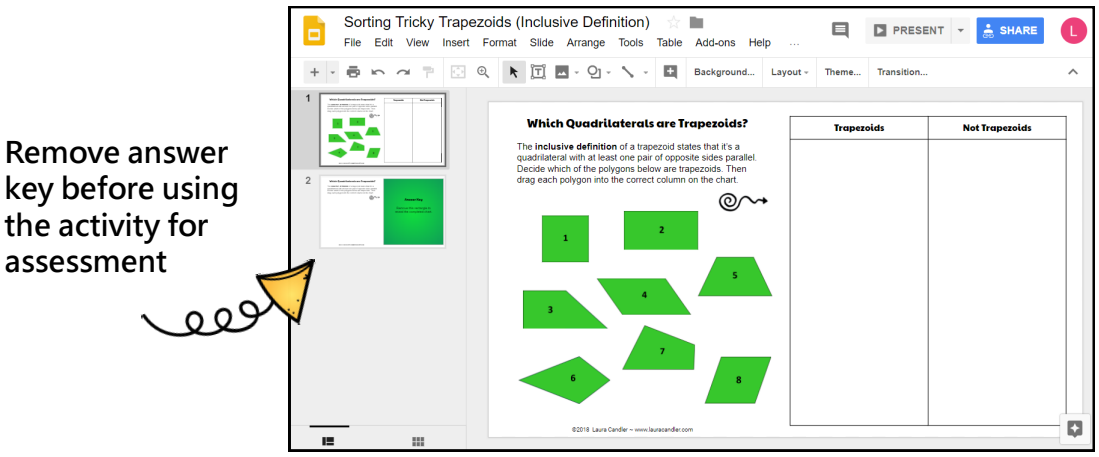


*** If using the British English version, replace the word "trapezoid" with "trapezium" in the directions.**

How to Prepare and Assign the Activity with Google Classroom

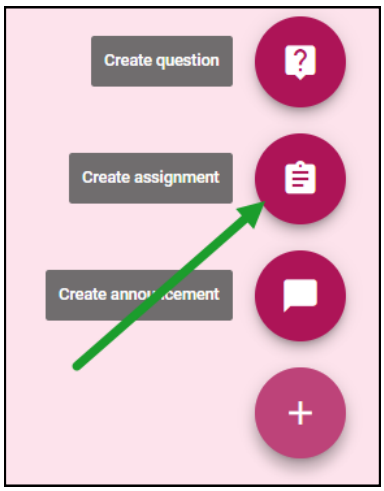
1. **Review Sorting Tricky Trapezoids before assigning it to your students.**

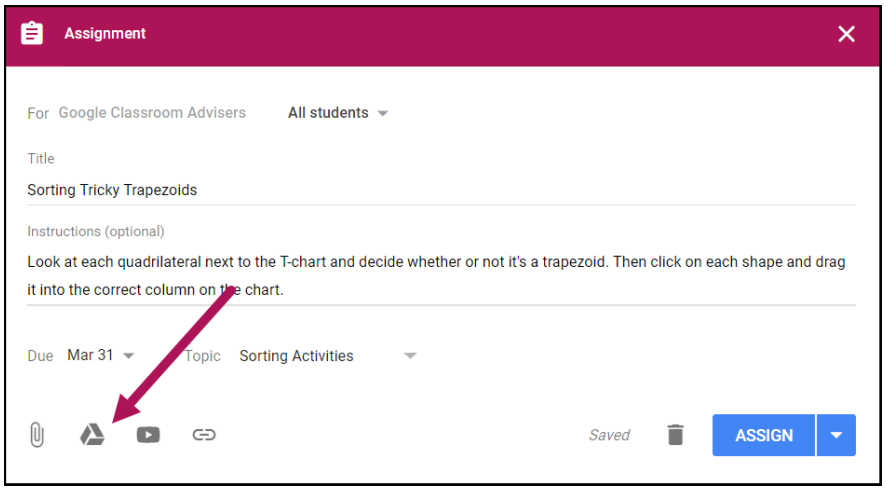
   Open the Google Slides activity, and review both slides before assigning it to your students. The first slide has eight numbered quadrilaterals and a T-chart labeled "Trapezoids" and "Not Trapezoids." Students are asked to drag each quadrilateral into the correct column. If you want to edit the directions, click **View → Master** and make changes on the master slide. The second slide has an answer key which is helpful if you want the activity to be self-checking. However, if you plan to use it for formative assessment, delete the answer key before assigning the activity. All changes are saved automatically, but you can revert to a previous version if necessary. Go to **File → Version History → See Version History** and select any of your previous versions.



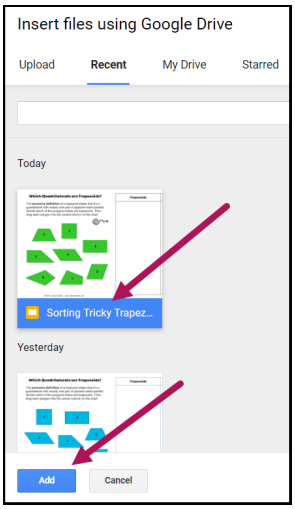
2. **Log on to Google Classroom and create an assignment.**

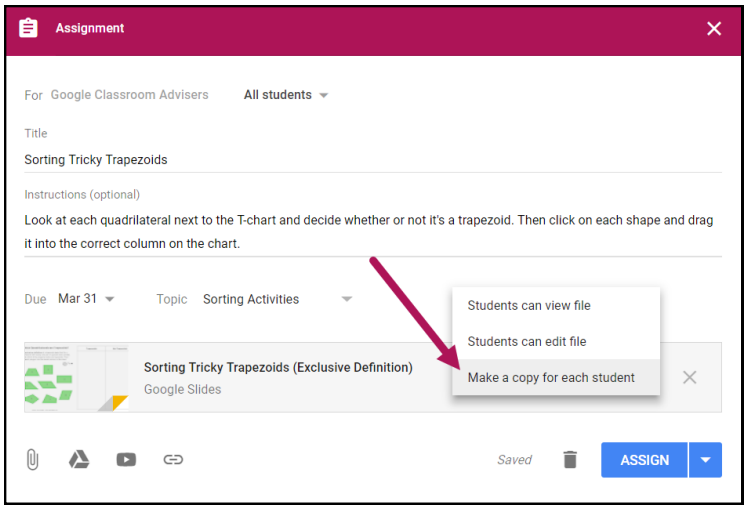
   When you're ready to assign the activity, go to Google Classroom and click the plus sign in the lower right corner. Then select "Create assignment." Enter the title of the assignment and any instructions for students, and then click the Google Drive logo in lower left corner.





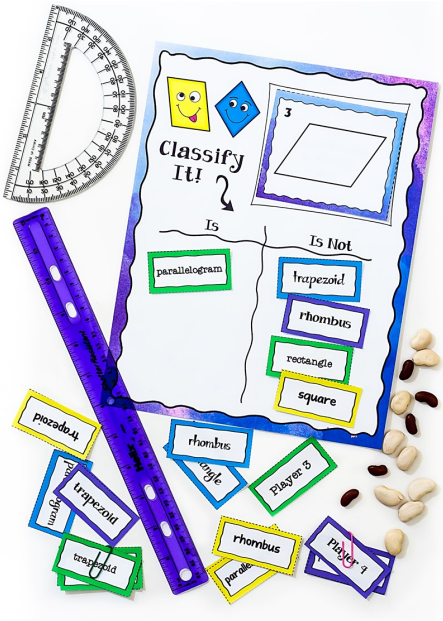
3. **Locate the sorting activity and assign it to your students using the "Make a copy" option.** Navigate to the activity in your Google Drive, select it, and click Add. The default level of access is for students to view the file, but in order to use the activity, your students need an editable copy of the file. Choose "**Make a copy for** each **student**" from the available options and then click Assign. When your students log on to Google Classroom, they will be able to open their own copy of the sorting activity. After they complete the activity, you'll be able to view their work as you would any other Google Classroom assignment.





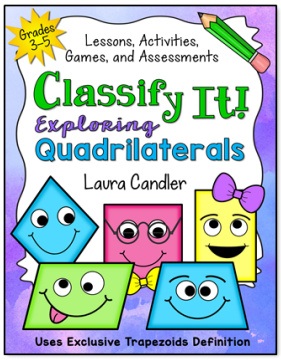
Hands-on Activities for Classifying ALL Types of Quadrilaterals

Sorting polygons is one of the most effective ways to teach kids to classify any type of quadrilateral. Classify It! Exploring Quadrilaterals is a collection of lessons, activities, games, and assessments based on this strategy. Three different versions based on the types of trapezoids are included with a single purchase of Classify It. Click here to preview it on TpT.

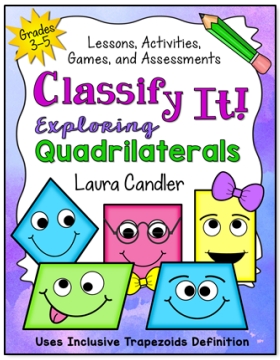


Classify It!
Exploring Quadrilaterals

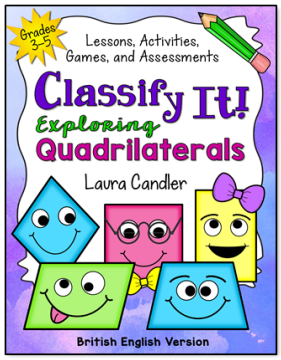
Exclusive Definition



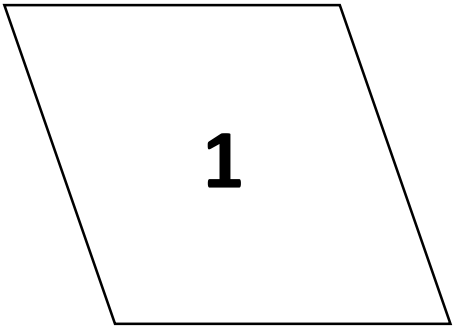
Inclusive Definition

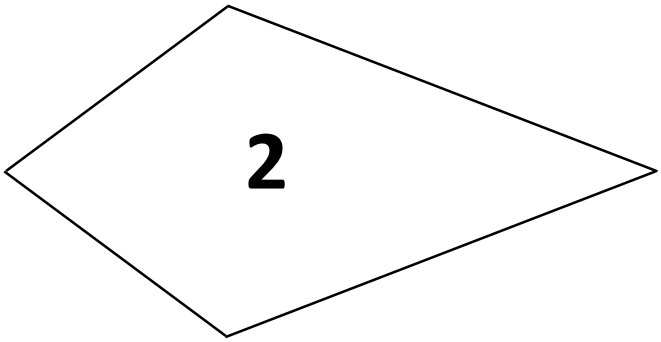


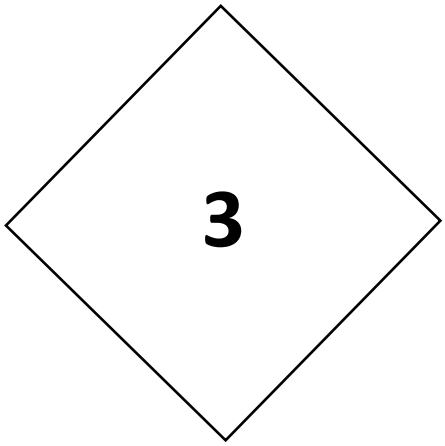
British English

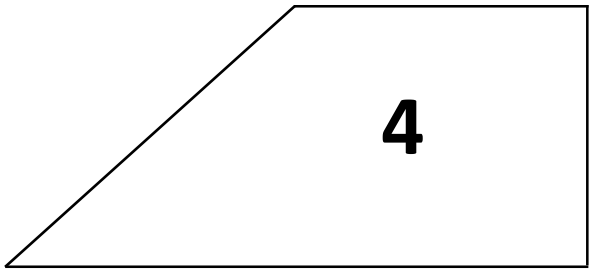


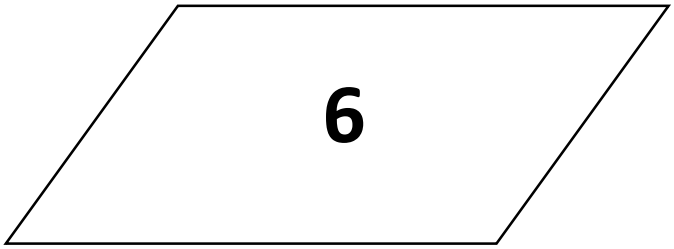
Quadrilaterals to Classify

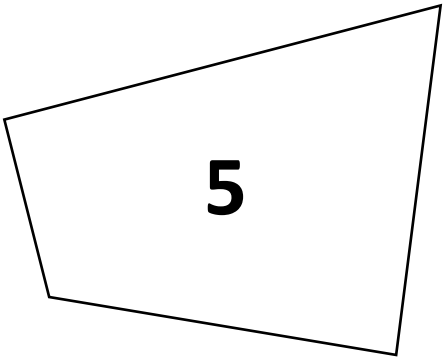


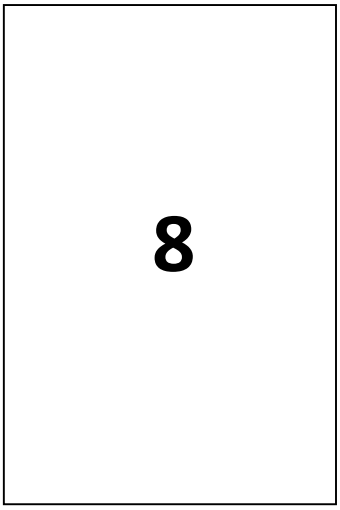


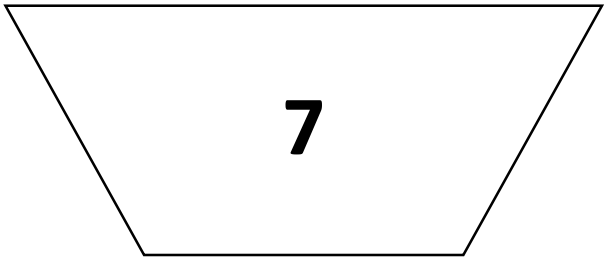












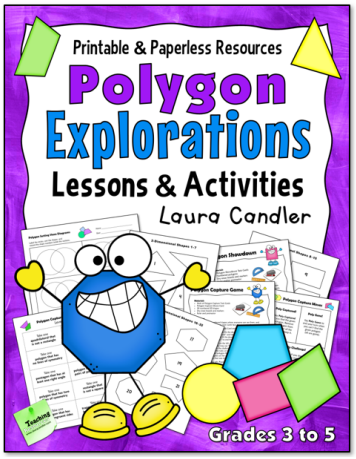
Which Quadrilaterals are Trapezoids?

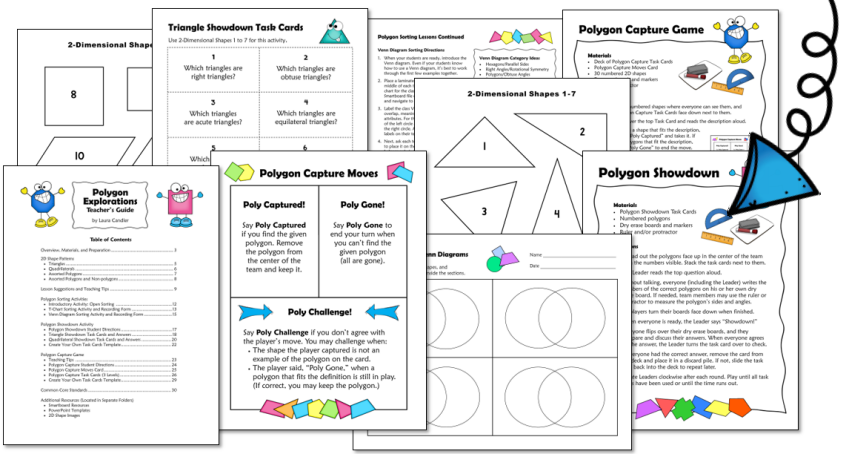
Trapezoid	NOT a Trapezoid

Which Quadrilaterals are Trapeziums?

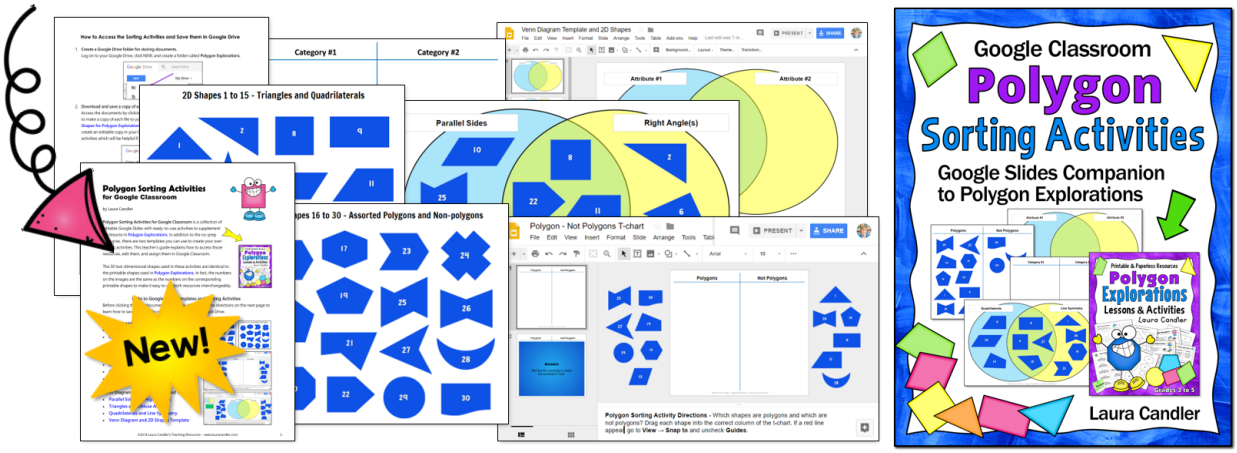
Trapezium	NOT a Trapezium

Looking for more resources to teach polygons? Polygon Explorations is a collection of engaging lessons, activities, and games for teaching students how to classify polygons by their attributes. Printable activity pages are included, as well as Smartboard resources and PowerPoint templates for paperless instruction. Click here to preview it on TpT.





Polygon Sorting Activities for Google Classroom includes 10 resources created with Google Slides that have ready-to-use sorting activities and templates to support the lessons in Polygon Explorations. These activities are perfect for independent practice or formative assessment. Click here to preview this resource on TpT.



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