In this lesson, students expand their understanding of the attributes of individual shapes and learn to classify shapes based on shared attributes. Students learn the differences between shapes based on a comparison of their attributes.

**COMMON CORE STANDARD(S)**

3.G.A.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

**DURATION**

Two 45-minute classroom periods
Engage and Explore, Explain, Elaborate page 1—one 45-minute classroom period
Elaborate page 2, Evaluate—second 45-minute classroom period

**MATERIALS**

A collection of shapes for sorting

**ENGAGE AND EXPLORE**

Engage students in a Shape Sort activity designed to activate prior knowledge of the defining attributes of two-dimensional shapes including circles, triangles, squares, rectangles, rhombuses, and trapezoids.

Have students work in groups of four with a set of two-dimensional shapes, doing the following related activities in order:
1. Each student selects a shape. In turn, the students tell one or two things they find interesting about their shape.
2. Students each randomly select two shapes and try to find something that is alike about their two shapes and something that is different.
3. The group of four selects one target shape at random and places it in the center of the workspace. Their task is to find all other shapes that are like the target shape according to the same rule. For example, if they say, “this shape is like the target shape because it has a curved side and a straight side,” then all other shapes that they put in the collection must have these properties. Do a second sort with the same target shape but using a different property.
4. Do a “secret sort.” You (or one of the students) create a set of about five shapes that fit a secret rule. Leave other shapes that belong and don’t belong in your set in a pile. Students try to find additional pieces that belong to the set and/or guess the secret rule.

Have an open class discussion after this sorting activity. Encourage students to share their strategies for sorting shapes and justify their reasoning for their sort.

**EXPLAIN**

**WATCH THE GENERATION GENIUS CLASSIFY QUADRILATERALS BASED ON ATTRIBUTES VIDEO AS A GROUP**
Facilitate a conversation using the Discussion Questions.

**ELABORATE**

Direct students to use their new understanding to complete the practice problem worksheets. Page 1 contains bare mathematical problems to solidify understanding of the process. Page 2 contains application problems for students to apply the process to solve real-world problems.

**EVALUATE**

Have students gather in groups of 2 or 4 to compare and discuss their answers to the problems. Allow students enough time to communicate with their peers about their process and their thinking. Encourage students to use correct mathematical language when discussing their process. Have each group choose two questions they want more information about, or they want to discuss as a class.

When groups are ready, take questions from students. Encourage groups to answer questions brought up by other groups.

Students can play the online Kahoot! quiz game located below the video. It provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz, or the exit ticket questions. All these resources are located below the video in the assessment section.