

Triangle Sort

Reporting category

Geometry

Overview

Students explore types of triangles by sorting a variety of triangles and classifying them according to their characteristics. They then justify their groups based on the characteristics.

Related Standard of Learning Objective

6.14

- The student will identify, classify, and describe the characteristics of plane figures, describing their similarities, differences, and defining properties.

Prerequisite Understandings/Knowledge/Skills

- Students must be able to describe the characteristics of specific triangles (scalene, isosceles, equilateral).
- Students must know how to measure and identify acute, obtuse, right, and straight angles.
- Students must be able to compare and contrast similarities and differences.

Materials needed

- Baggies of triangles from “Student Triangle Sorting Pieces” (two pages), one baggie for each group
- “Triangle Sort Activity Recording Form,” one copy for each student

Instructional activity

1. Place students into groups of four. Have students work together to review the characteristics of triangles.
2. Distribute to students a plastic baggie with triangles from the “Triangle Sorting Activity” handouts. Allow a few minutes of free exploration.
3. Explain to students that they will be working in their groups to sort their triangles, first in one group based on a certain attribute and then into a second group based on a different attribute. (The two attributes will be measure of sides and measure of angles; however, do not reveal that to students at this time). Tell students they must justify their reason for placing their triangles into the groups they choose.
4. Instruct groups to first choose one attribute and sort triangles into groups using that attribute.
5. Distribute the “Triangle Sort Activity Recording Form,” and instruct students to record their first set of groups onto the chart.
6. Instruct groups to now choose a second attribute and resort their triangles according to that attribute. Stress to students that it is not necessary for them to put the same triangles into the same group.
7. Again, instruct students to record their new set of groups onto their chart. Stress that they need to justify their sets by giving reasons for their grouping.
8. Write the following terms on the board or overhead: *acute*, *right*, and *obtuse*. Ask students if there are any groups who used these ideas to sort their triangles. Allow a group who used this as one method of sorting to share which triangles were acute, which were right, and which were obtuse.
9. Instruct all groups to resort their triangles into those groups and add to their recording form.
10. Write the following terms on the board or overhead: *isosceles*, *scalene*, *equilateral*. Ask students if they are familiar with these terms. If no one is, explain the meaning of each. Ask students if any sorted their triangles into groups based on the length of sides. Allow a group who used this as a method of sorting to share which triangles were isosceles, which were scalene, and which were equilateral.
11. Instruct all groups to resort their triangles into those groups and add to their recording chart.
12. Explain to students that typically, triangles are named for both their angle measure and length of sides, for example, equilateral/acute triangles have all sides congruent and the largest angle is acute.

13. Instruct students to classify each triangle in their set by both methods of classification. Check student results.
14. Have students write a journal entry that explains methods for classifying triangles and describes attributes of a triangle.

Sample assessment

- Assess students informally as they work through the activity in their groups.
- Use item 13 as a formal assessment for each individual student or the group.
- The journal entry can become part of a student portfolio.

Specific options for differentiating this lesson

Technology

- Provide overhead, actual triangle pieces, pattern blocks, pictures of different types of triangles, and dotmatrix paper.
- Direct students to www.readplease.com.
- Use a dynamic geometry software package such as Starway math or geometer sketchpad, www.coolmath.com.

Multisensory

- Have students use the following mnemonic devices: scalene = not equal, isosceles = two eyes (two equal sides), equilateral = all sides equal.

Community Connections

- Invite an architect as a guest speaker to the class.
- Have students observe buildings in the community to identify types of triangles in the real world.
- Have students identify with their family the different types of triangular shapes found at home.
- Take a field trip to a construction site to examine a set of blueprints and see the construction of these blueprints in action.

Small Group Learning

- Have students work together in groups to review the characteristics of triangles.
- Have students work together in groups to sort the triangles into given categories.
- Have students work in groups to record the findings of the triangle sort.

Vocabulary

- Students need to know the following vocabulary: attributes, sort, classify, similarities, differences, scalene, equilateral, isosceles, congruent, right, obtuse, and acute angles.
- Use a word wall.
- Provide a picture dictionary.
- Provide a KWL chart (K= what you already know, W= what you want to know, L= what you learned).
- Play the “Zip Around the Class” game. (Give the class a vocabulary word and ask every student to say what he/she thinks the definition of the word is. Once all the students have shared, give the correct definition. This gets all students to participate even students who otherwise never raise their hand.)
- Play the “I Have” game
 - a set of riddle cards are dealt to students
 - students read the riddle from their card aloud while the other students listen and shout out “I HAVE [and give the answer to the riddle]. The person who said “I have” reads the riddle on his/her card, and the game continues (e.g., Who has a 3-D figure with 2 circular bases and one rectangular face? I HAVE a cylinder. Who has. . . ?).

Student Organization of Content

- Use recording form, graphic organizer, flash cards, flipchart, and triangle book – to include picture and definition.

For a copy of extension activities, the *Student Triangle Sorting Pieces*, and the *Triangle Sort Activity Recording Form* please visit www.ttaonline.org and access the lesson *Triangle Sort*.