

## Using a Dichotomous Key

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### Lesson Overview

In this lesson, students practice classifying organisms, objects, and materials based on their physical characteristics and creating a dichotomous key. A dichotomous key is a tool used to identify similar organisms or things.

### Standards Addressed

- SC 2005      6-2.2: Recognize the hierarchical structure of the classification (taxonomy) of organisms (including the seven major levels or categories of living things—kingdom, phylum, class, order, family, genus, and species).
- SC 2014      6.L.4A.2 Develop and use models to classify organisms based on the current hierarchical taxonomic structure (including the kingdoms of protists, plants, fungi, and animals).

### Disciplinary Literacy Best Practices

Collaborative Groups  
Guess My Rule  
Card Sort (Object Sort)

### Lesson Plan

Time Required: One 55-minute class period

Disciplinary Vocabulary: dichotomous key

Materials Needed:

- Alien creature sheet
- Copy of dichotomous key
- Samples of dichotomous keys
- Variety of pictures or real objects for classifying ---leaves, flowers, seeds, etc.
- Bags of shells or leaves for groups

## Engage

- Discuss with students the importance of classifying objects using different attributes. Scientist use classification systems to show how organisms are related.
- Provide each student group with a variety of objects or pictures of objects. Examples: leaves, flowers, seeds, etc.
- Card Sort: Ask them to sort and classify them based on characteristics of their own choosing.
- “Play” *Guess My Rule*. After student groups have completed classifying their objects, allow students to rotate from table to table and guess the attribute used by the other groups.
- Remind students that it is these attributes/characteristics of living things that allows us to classify them.
- Tell students that you are going to use another method of classification, the dichotomous key to continue investigating classification.

## Explore

- Show students the aliens on the Alien Dichotomous Key. Discuss how the aliens can be classified into groups based on their similarities. Take suggestions from the class.
- Model the use of the Alien Dichotomous Key to name one of the aliens on the sheet.
- Students will use the Alien Dichotomous Key to identify the other aliens and write their names in the boxes.
- Discuss how the dichotomous key assisted them with properly identifying each alien.
- Remind them of how the alien dichotomous key used observable properties and attributes to classify organisms or things. The observable traits of the aliens lead us to correctly name each one.
- Distribute a bag containing leaves or other natural items (seashells work well also) to each collaborative group.
- Ask the students to observe the items and classify them based on two attributes. Discuss the attributes used to classify the items into two groups.
- Have the groups classify the items again based on a more specific feature. Always make sure the two characteristics are contrasting, or dichotomous.
- Have students continue to use observable features to sub divide each group based on different attributes.
- Students should repeat step 9 until only one item remains in each group.
- Provide guidance as students create a dichotomous key to identify the items. Students will use the dichotomous key to identify the different names of the leaves or shells. (A dichotomous key give instructions in pairs of statements. With each shape, start with the first pair statements. Decide which description describes the item and follow the line to the right. There you will give the item either a number or a name. If it is a number, go to the pair of steps with that number, for example if the number is 3, go to steps 3a and 3b. If the line ends in a name you have identified your shape, so write

down the name of the shape. Continue until each item has a name. There is only one item per name.)

**Note to Teacher:** You may need to model this using several of the items. If using leaves, you'll also need to provide resources that allow students to identify the leaves. Allow groups to use a partner's dichotomous key to identify their items.

### Explain

- Allow time for students to share and discuss the task. As you hold class discussion use the questions below.
  - What are some of the characteristics you used to compare and contrast the items?
  - How many different characteristics did you use to divide the groups until there was only one left in each group?
  - What did you notice about the groups after each division?
  - Compare your key with the key of a classmate. Are there other ways in which you could have grouped your items?

### Extend:

- Create another classification system for classifying using 2 attributes.

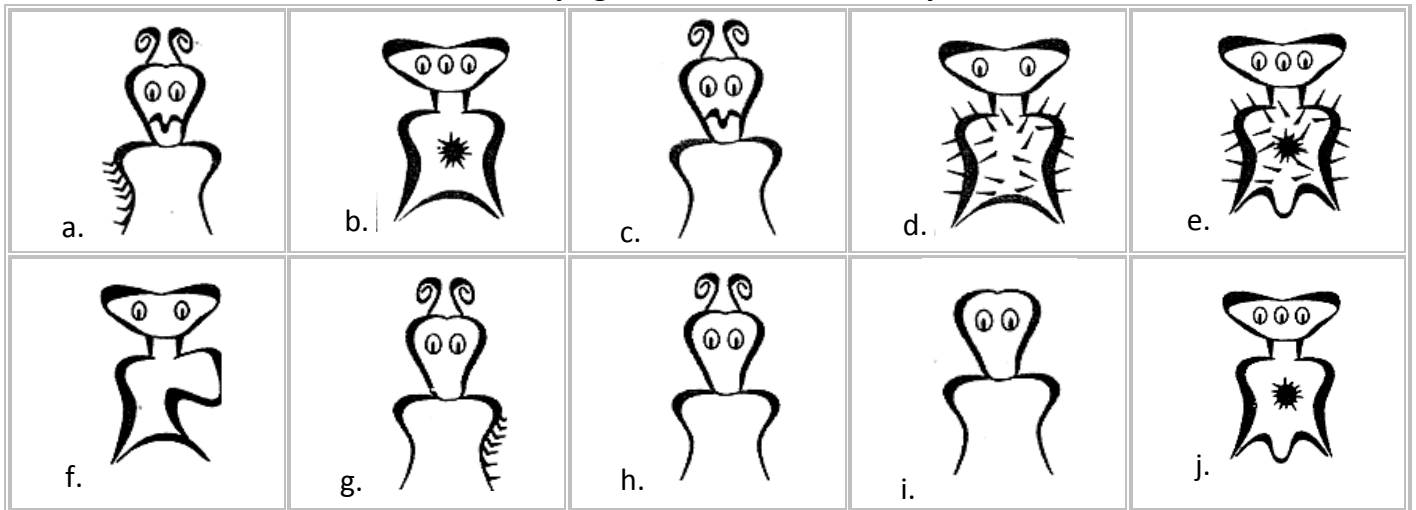
### Teacher Reflections and Biographical Information

This is a great lesson that will assist students in using the Dichotomous Key. If students continue to have difficulty with this concept, the web has many examples for practice. This lesson originally appeared as part of the SC Standards Support System (S3) Curriculum. It was adapted to include disciplinary literacy strategies.

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## Classifying with a Dichotomous Key



Using the dichotomous key, identify the 10 creatures. Write the name of the creature in the correct box.

1. a. If the alien has two eyes, go to 2  
b. If the alien has three eyes, go to 3
2. a. If the alien has an antennae, go to 4  
b. If the alien has no antennae, go to 5
3. a. If the alien has spikes, its name is **Spike**  
b. If the alien has no spikes, go to 9
4. a. If the alien has a mouth, go to 6  
b. If the alien has no mouth, go to 7
5. a. If the alien has spikes, its name is **Dodge**  
b. If the alien has no spikes, go to 8
6. a. If the alien has spikes, its name is **Apple**  
b. If the alien has no spikes, its name is **Smiley**
7. a. If the alien has spikes, its name is **Clem**  
b. If the alien has no spikes, its name is **Dopey**
8. a. If the alien has a wide head, its name is **Skippy**  
b. If the alien does not have a wide head, its name is **Bounce**
9. a. If the alien has an arch on the bottom, its name is **Slick**  
b. If the alien has no arch on the bottom, its name is **Sleepy**