

# A Key to Odds and Ends

Students are introduced to a common method of classification used by scientists, the dichotomous key. They will use this method to “identify” a collection of everyday objects.

**Activity time**            30 minutes

## Materials:

Each student group will require:

*Bag of Odds and Ends*

*Key to Odds and Ends* worksheet

Answer Key (optional)

Each *Bag of Odds and Ends* contains:

small metal paperclip, large metal paperclip, plastic coated paperclip, wooden clothespin (w/out metal spring), party toothpick w/ plastic fringe, small sponge, metal jack (colored), rubber garden hose washer, penny, plastic straw (cut to 3”), pencil-top eraser

## Introduction:

Scientists use keys to help identify and classify plants and animals. By organizing specimens based on similar characteristics, scientists can also better understand how these species might be related to each other on an evolutionary level. Keys can come in many different formats—some are used to identify organisms into larger categories, such as kingdoms or phyla, and others are used to distinguish among closely related species. A dichotomous key presents the user with a series of positive/negative statements regarding distinct characteristics of the specimen. (“The animal has a backbone.” OR “The animal does not have a backbone.”) These statements are sometimes referred to as **couplets**. Notice that the couplet is essentially an either/or choice. The specimen is correctly identified when one makes the appropriate choice for each set of characteristics in a series of consecutive steps, similar to a flow chart.

This activity introduces students to the use of a dichotomous key using everyday items. The goal of this activity is NOT to try to identify these objects, but rather to use a key correctly.

## Procedure:

1. Discuss with students different ways of grouping objects. Ask why it is important to group objects. You might introduce dichotomous keys as one way of grouping and identifying things. Introduce the term “dichotomy” and show how this is important in this kind of classification scheme.

Example: The people in this room could first be grouped into categories of eye color. One couplet for this might be:

People who have brown eyes.

People who don’t have brown eyes.

3. Divide the students into teams of two or three and give each team a **Bag of Odds and Ends** and the worksheet *Key to Odds and Ends*.

## A Key to Odds and Ends

- Students should choose one item from the bag and follow the key in order to “identify” the object. After making the appropriate choice in each couplet, the team will then follow the directions on the right hand side of the key until they have identified the object with a particular letter. Students can write the object name next to the appropriate letter on their worksheet, or copy this information into a notebook.

### **TEACHING TIP:**

Students often “switch” their items as they proceed through the key, choosing an item that matches the positive statement. That is, a student classifying a paperclip, after the statement “Object not made of metal”, might drop the paperclip and pick up a toothpick, since it makes that statement true.

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## A Key to Odds and Ends Answer Guide

Object <b>a</b>	tooth pick	Object <b>g</b>	painted paper clip
Object <b>b</b>	clothes pin	Object <b>h</b>	jack
Object <b>c</b>	eraser	Object <b>i</b>	penny
Object <b>d</b>	rubber washer	Object <b>j</b>	large paper clip
Object <b>e</b>	sponge	Object <b>k</b>	small paper clip
Object <b>f</b>	plastic straw		

## A Key to Odds and Ends

# Student Worksheet

For this activity, you will use a dichotomous key to classify a bunch of everyday objects.

### How to Use This Key:

1. Choose one item to start with.
2. Begin by reading the first set of choices, called a couplet. After discussing the two choices within the first couplet with your team, decide which statement in the pair most closely describes the item you are trying to identify.
3. Next, follow the directions on the right hand side of the key. For example, in couplet number 1 if you decide that the object was metal, you would continue on to couplet number 7; if you decide that the object is not metal, you would continue on to couplet number 2.
4. Continue to work until your team has identified all 11 objects.
5. After you have identified all the objects, check your answers with the teacher's answer sheet.

<b>choices</b>	<b>directions</b>
1. Object made of metal..... Object not made of metal.....	Go to couplet 7 Go to couplet 2
2. Wood..... Not wood.....	Go to 3 Go to 4
3. Plastic tip..... No plastic tip.....	Object a _____ Object b _____
4. Rubber..... Not rubber.....	Go to 5 Go to 6
5. Pointed..... Not pointed.....	Object c _____ Object d _____
6. Rectangular shape..... Tube shape.....	Object e _____ Object f _____
7. Painted..... Not painted.....	Go to 8 Go to 9
8. Flat..... Not flat.....	Object g _____ Object h _____
9. Object copper color..... Object silver color.....	Object i _____ Go to 10
10. Greater than 3 cm..... Less than 3 cm.....	Object j _____ Object k _____