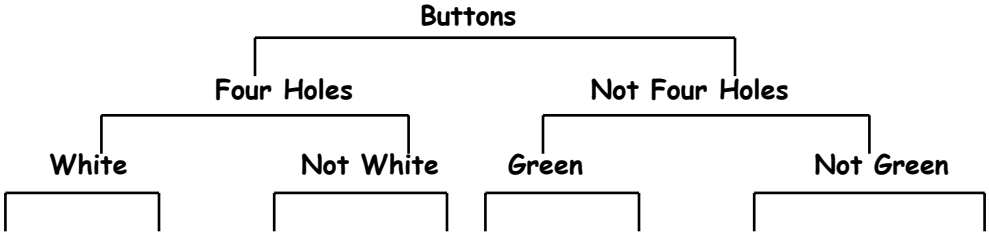
Instruction Section A

A Sample Dichotomous Grouping

Grouping objects by their observable characteristics is called classifying. Scientists often use a dichotomous key to classify animals, plants, and objects. Objects that have shared characteristics are placed into a large set, and then divided into smaller sets until there is just one in each set. Example:



Objects that are great to sort are colored shapes, pastas, buttons, nails and screws, leaves, pencils, etc. Students can work in groups to sort items, so that you don't have to make so many sets. Let them make their own key on a piece of drawing paper. As they sort their items, they can circle the items and label the reason they grouped them the way they did. The teacher walks around and checks to make sure they understand the process.

Instruction Section B

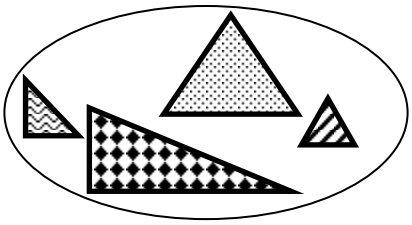
Dichotomous Activity

In science, the dichotomous key is used like a flow chart to group objects by their observable characteristics. When we group objects according to observable characteristics or properties, we are classifying. Think about the science classes where you learned about phylum, class, and order. Dichotomous keys introduce students to the process that scientists use when organizing their observations into these groups. The examples below show how this process works. Practice this yourself until you feel comfortable enough to teach it to your students.

Think of dichotomous grouping as a game. The objective is to sort a group of objects by their observable characteristics until each item is in a group by itself. Follow the steps in the example below.

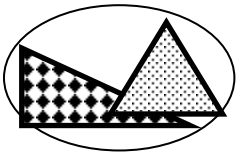
Start with a group of similar objects.

Triangles

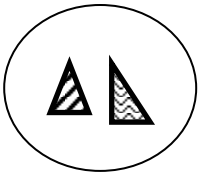


First, decide which characteristic to use for the first grouping. This is always hard because the items are similar. Use a simple characteristic, such as color, size, pattern, or shape. Divide the items into two subgroups and then label one group with the characteristic you used and label the other group as not having that characteristic.

large

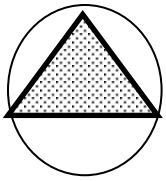


not large

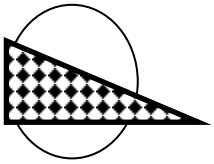


Next, work with one group of items and sort until each item is in a subgroup by itself. Then follow the same procedure for the other group.

spotted



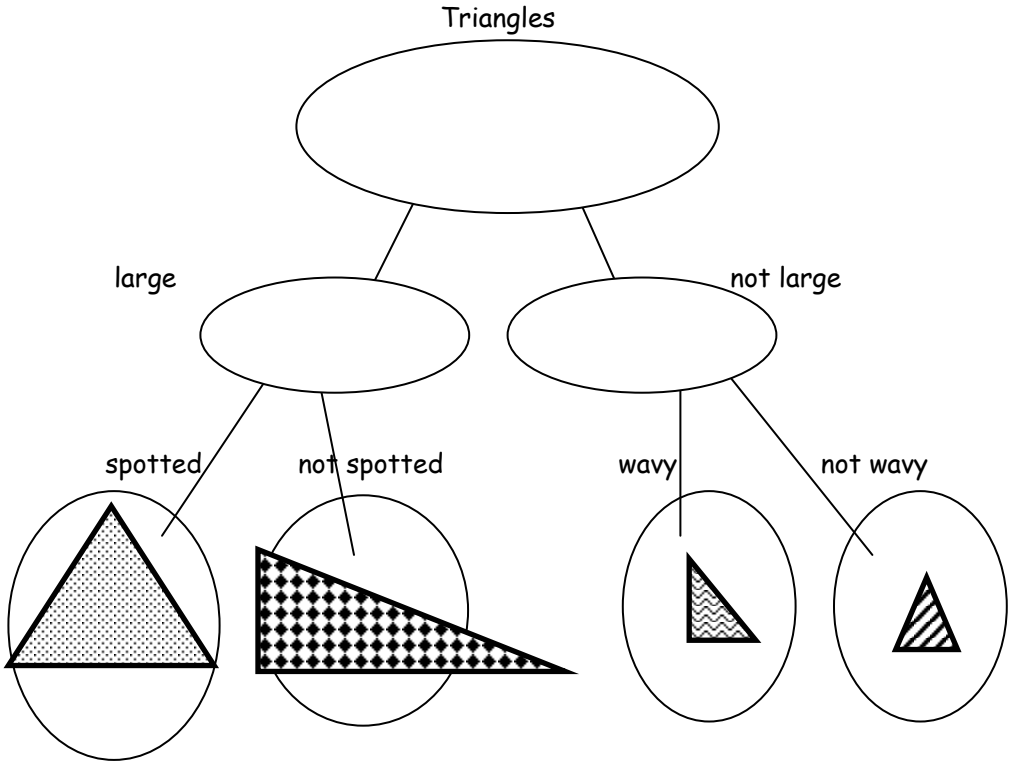
not spotted



wavy

not wavy

The example below shows how a dichotomous key should look. The labels are the key characteristic that was used to divide the items.

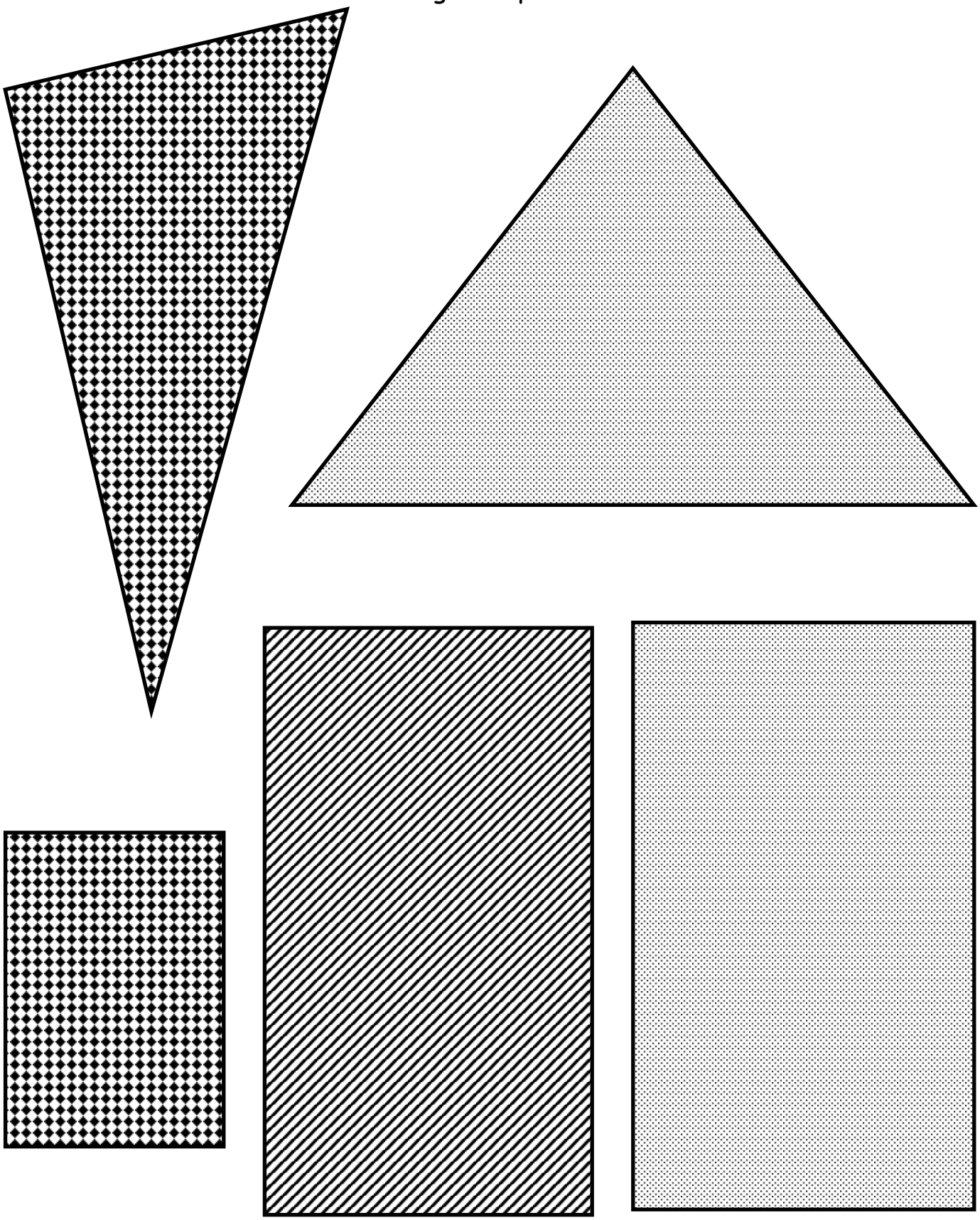


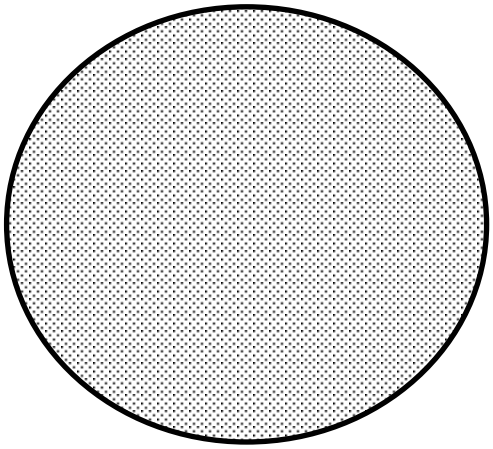
Depending on the characteristics selected, this same group of triangles could be sorted in several ways. For instance, if you had studied the names of triangles, they could be sorted by right, isosceles, or scalene triangles. The students could color the triangles, and the triangles could be sorted by colors.

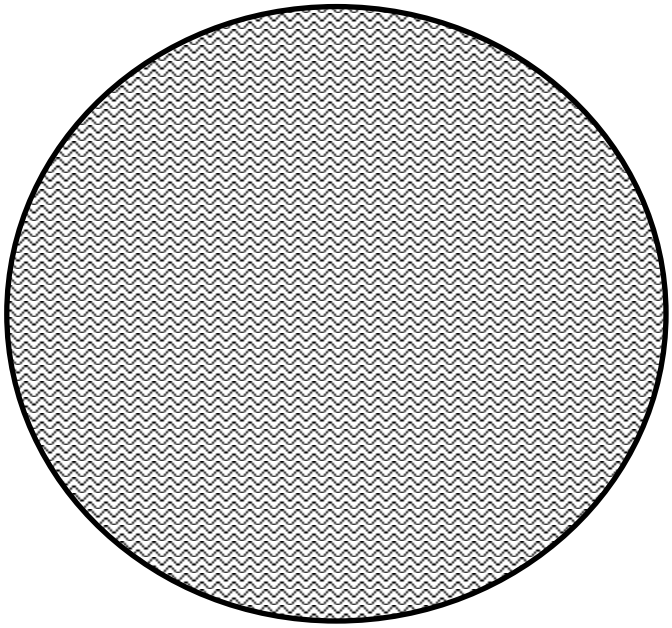
To teach dichotomous grouping to students, try the following procedure:

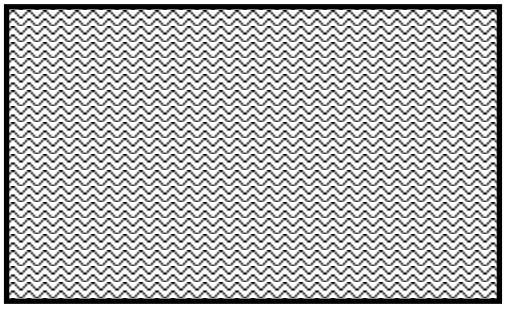
1. Give each student or group of students a set of shapes (found on the following sheet). You, a parent volunteer, or the student could cut the shapes apart and store in a re-closable plastic bag.
2. Start with the set of triangles and demonstrate the process. Use the large set of teacher demonstration shapes on the board or chart paper to model each step.
3. Now use the set of triangles again and let the students suggest a new way to group them. Repeat the process by demonstrating with the whole class. Students may use a sheet of newsprint or plain copy paper to record their subgroups for each step.
4. Let the students try the process by themselves, using the set of circles or rectangles. Circulate and give assistance if needed. Take a few minutes to discuss the different approaches to sorting the shapes.
5. As the students become more proficient, place all the shapes together into one group and have them sort the larger group of shapes.
6. Groups of items, such as pastas, nuts and bolts, buttons, die cut objects, pens, pencils and markers, could also be used for sorting.

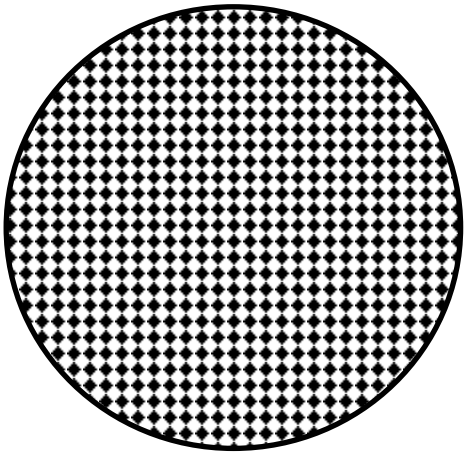
Large Shapes

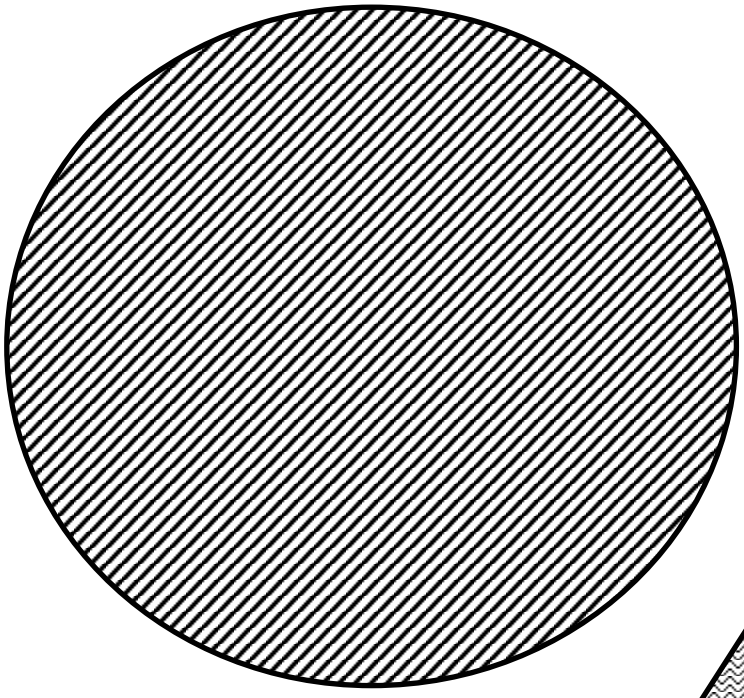


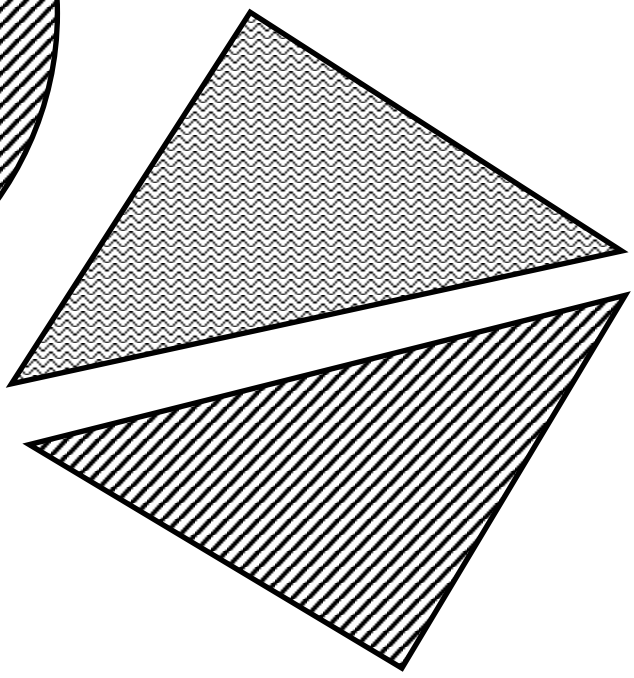




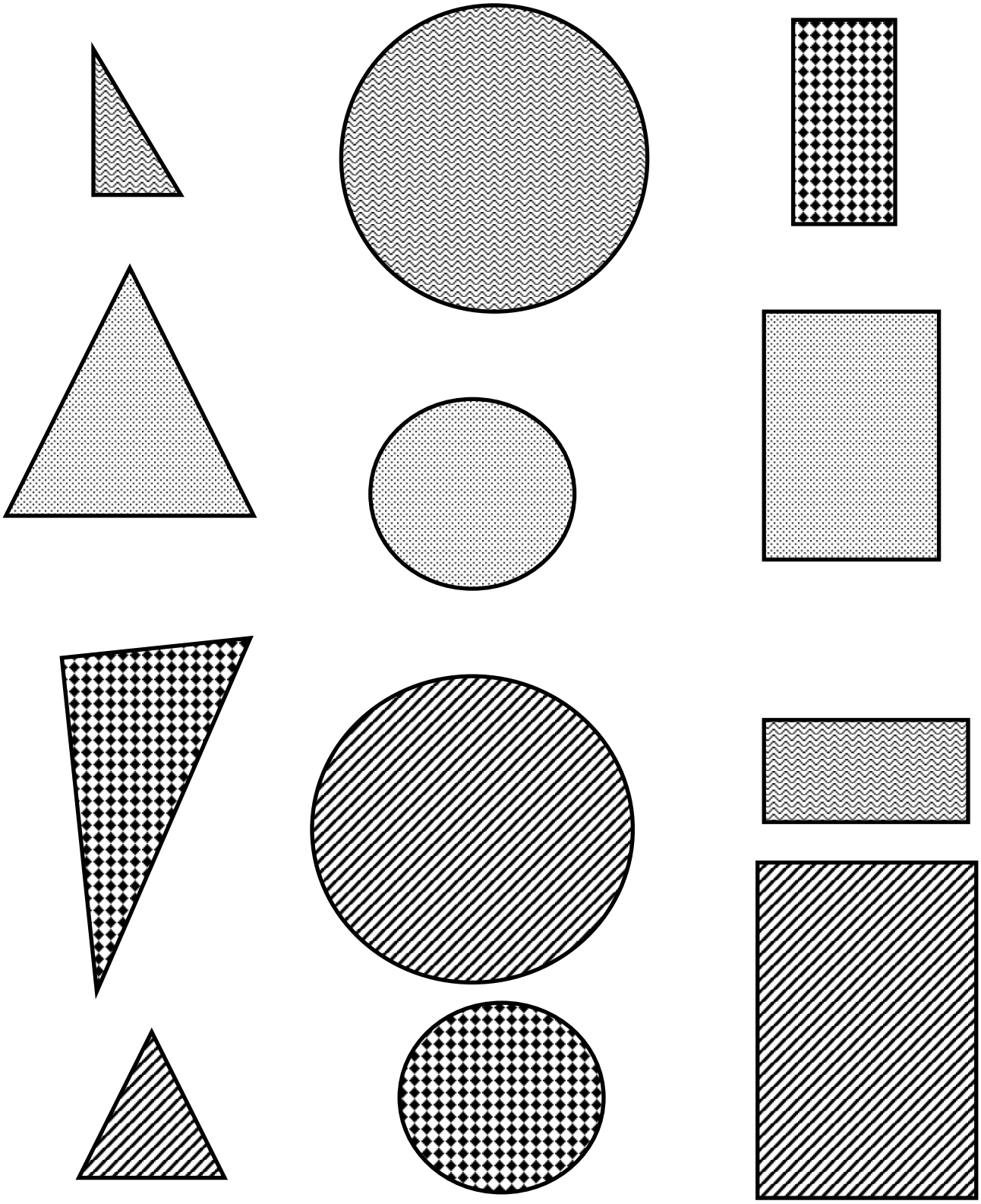


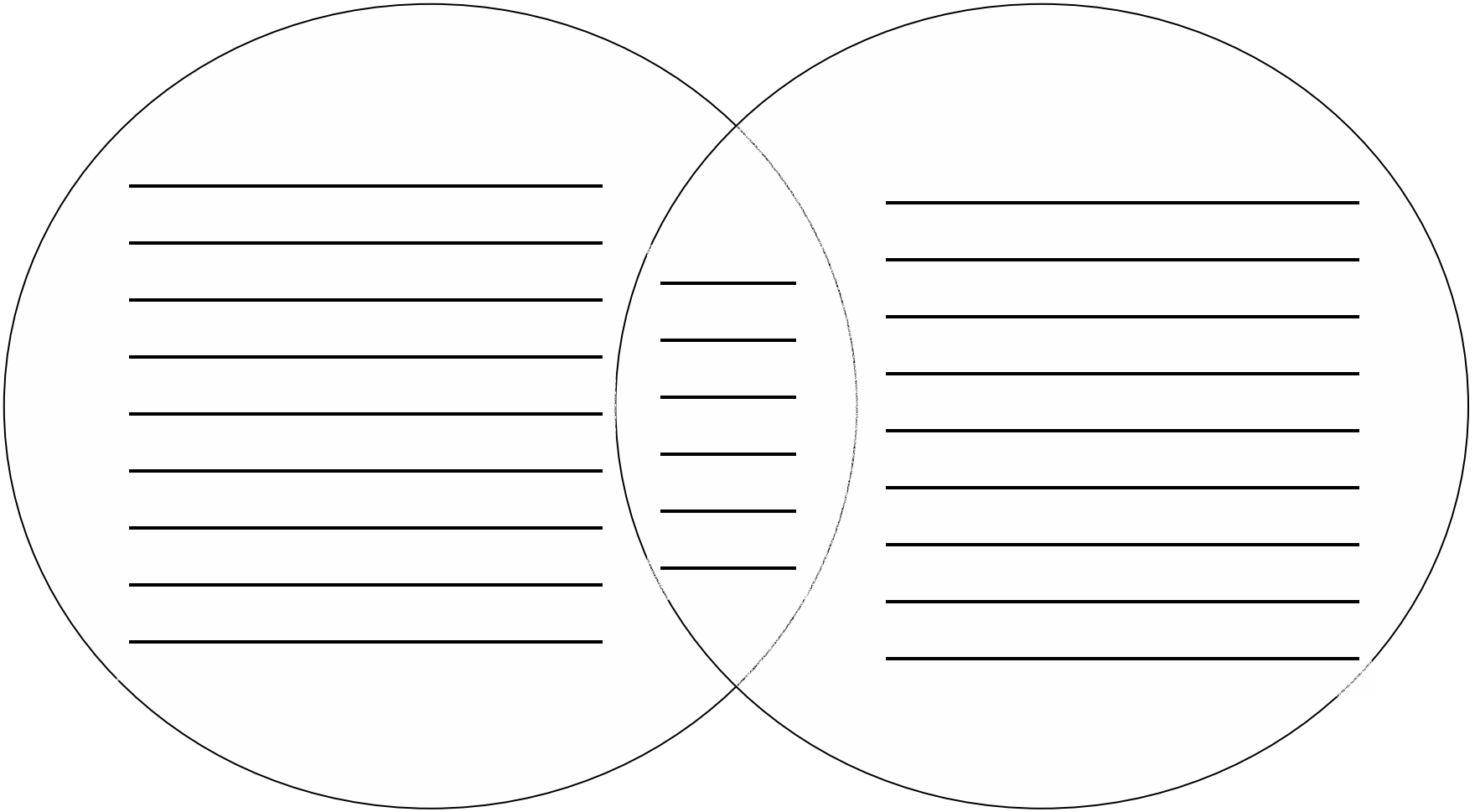






Student Dichotomous Activity Shapes

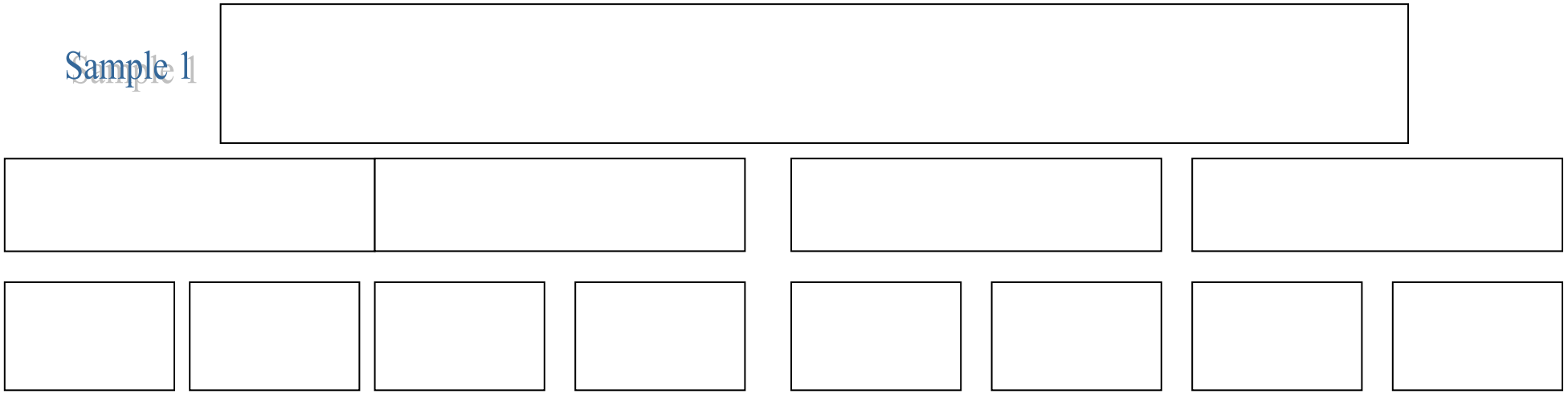




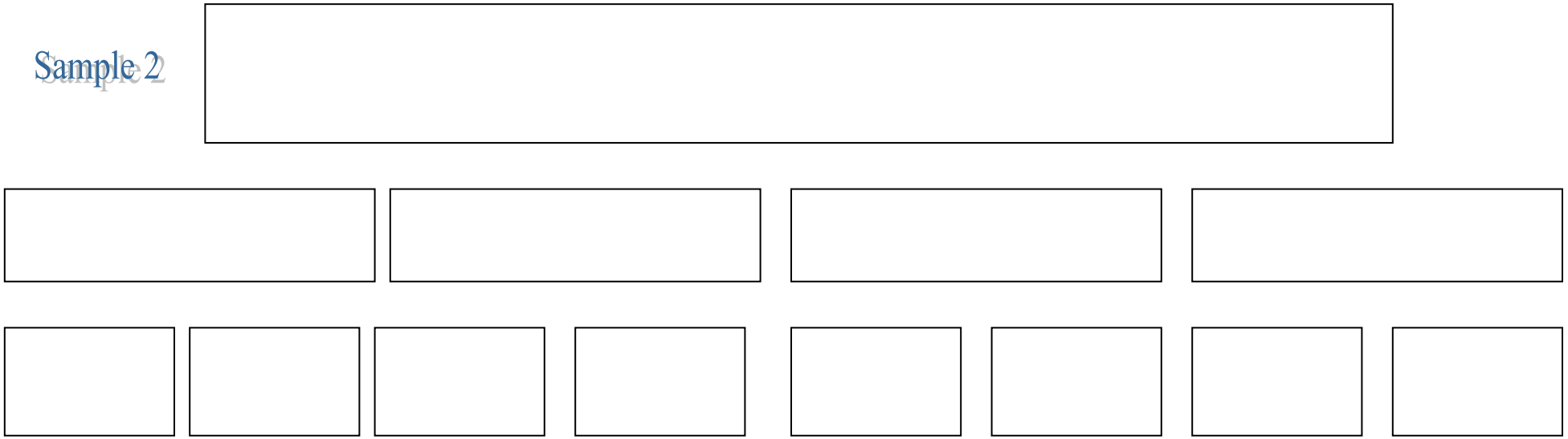
Venn diagram

For comparing and contrasting two different items

Sample 1



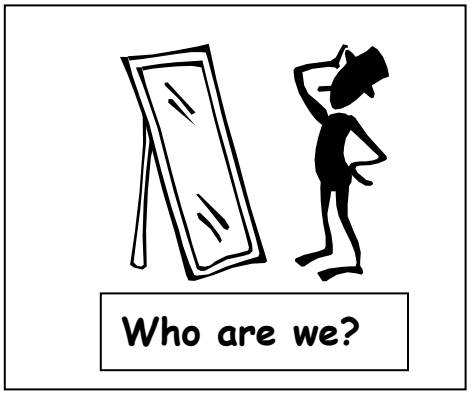
Sample 2



Dichotomous Key

(For use when classifying multiple groups of items) (Breaks the group down into its simplest form)

The Class
Dichotomous Key



The Class

Boys | **Girls**

Brown | **Blue** | **Green** | **Brown** | **Blue** | **Green**

Discovering Who I Am!

Group Dichotomous Key

- First, make sure you understand the Cooperative Worker Rubric.
- Second, make sure you have the following materials needed for this assignment:
  - ☼ One sheet of construction paper
  - ☼ Glue
  - ☼ One bag of small Dichotomous Grouping materials
  - ☼ Paper
  - ☼ Pencil
- Third, take the bag of materials and sort them like we have done for the other dichotomous sorting activities. Write down the groups the items fall into as you sort them.
- Fourth, once you have the items sorted, you will recreate your key on the construction paper. You may glue your items on the construction paper. Make sure you label each area that you sort.
- Finally, once you have everything glued and labeled, you will get ready to share your dichotomous grouping with the class.

Discovering Who I am!

My Dichotomous Key

First, obtain the materials needed for this activity and sort them on your desktop.

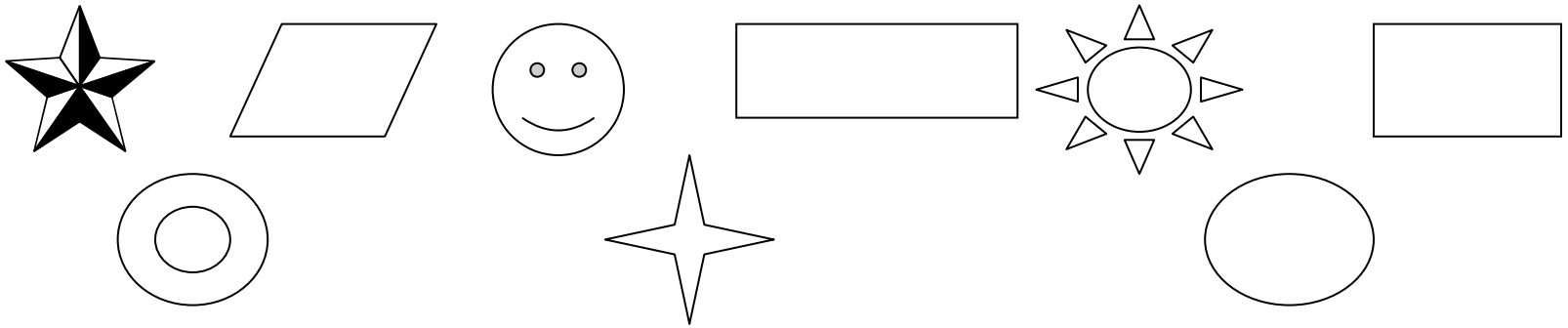
- Construction paper
- Glue
- Small bag of dichotomous key materials
- Paper
- Pen/pencil

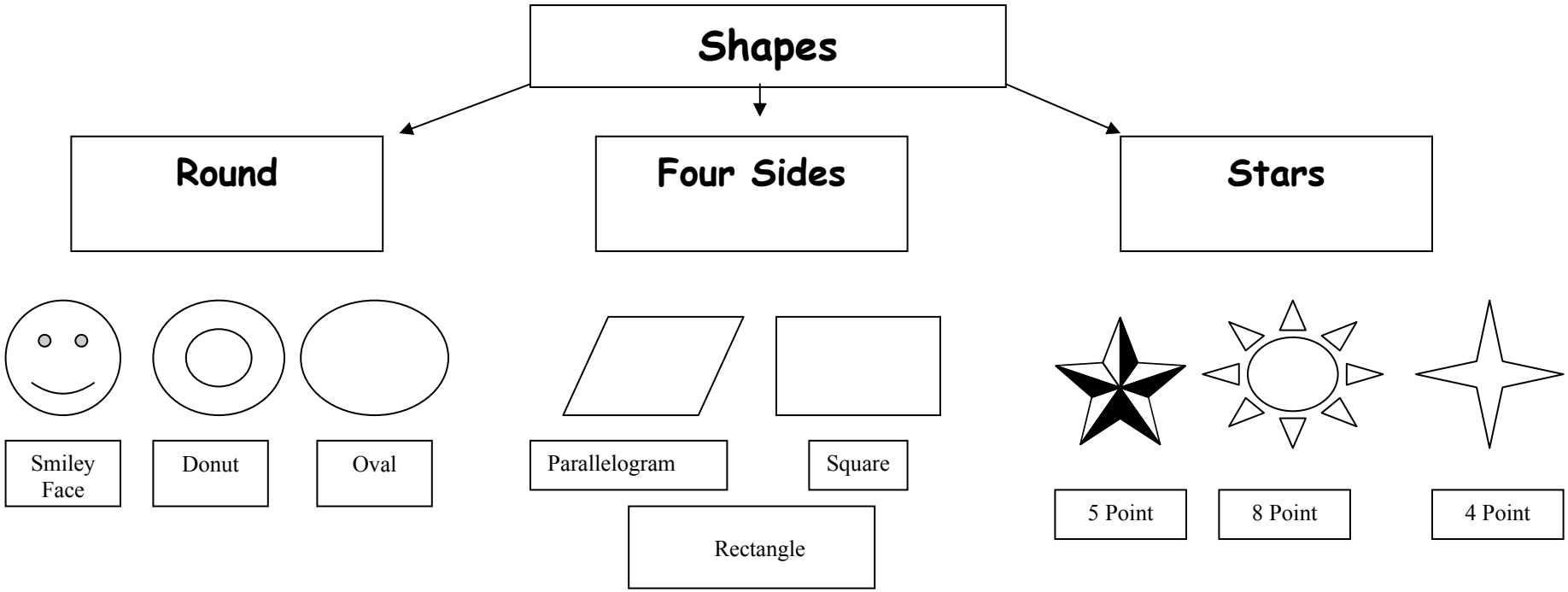
Second, notice the groups you have sorted the items into. Write them down on a piece of scrap paper

Third, create your dichotomous key based on the groups you created and then glue the items down.

Fourth, write your name on you dichotomous key and turn in for assessment.

Sample Dichotomous Key
To be used with Group and Individual Sorting Activities





Note: Notice how the actual items are in the last row. Remember that as we sort, we move the objects around to form their different groups in the key. Once you get to the last row, where the objects should be listed as single items, we need to know what the groups were before, so it may be necessary to write down the groups as you create them so they aren't forgotten.

What Makes Me Who I Am?

This Binder Belongs to:

_____