

Super Sort - Kindergarten

Ohio Standards Connection

Patterns, Functions and Algebra

Benchmark A

Sort, classify and order objects by size number and other properties, and describe the attributes used.

Indicator 1

Sort, classify and order objects by size, number and other properties. For example:

- a. Identify how objects are alike and different.
- b. Order three events or objects according to a given attribute, such as time or size.
- c. Recognize and explain how objects can be classified in more than one-way.
- d. Identify what attribute was used to sort groups of objects that have already been sorted.

Data Analysis and Probability

Benchmark B

Sort and classify objects by attributes, and organize data into categories in a simple table or chart.

Indicator 2

Arrange objects in a floor or table graph according to attributes, such as use, size, color, or shape.

Lesson Summary:

Students sort objects based on one characteristic. They learn the term “attribute” and give examples of attributes of objects. Students explain their reasoning for sorting objects into groups. Students learn to use more than one attribute to sort objects. Since it is divided into parts, this lesson can be taught at different times throughout the day or over a period of several days. This lesson could be part of a unit about helping at home or in school.

Estimated Duration: 60 minutes

Commentary:

Students must sort and classify to build the foundation for understanding patterns. When students experience sorting a variety of objects, they learn to see the objects’ similarities and differences. Assist students in communicating their sorting criteria. Allow them to develop and use their own criteria when sorting collections.

Pre-Assessment:

Instructional Tip:

To prepare for the pre-assessment, copy *Pre-Assessment Chart*, Attachment A. For each student, place cereals of different shapes or colors in small, lidded containers or re-sealable bags and fold sheets of construction paper in half. This pre-assessment provides information for differentiating instruction. Students who struggle with the task may need more individualized instruction in sorting objects with simple characteristics. Students who easily sort the objects can be given objects with more attributes to sort.

- Distribute the plastic containers and folded construction paper to the students.
- Tell students:
Open the plastic tubs. Look at what is inside without taking the objects out of the tub. Discuss what you notice about the objects with a partner.
- Allow students time to observe the objects and discuss with partners. Listen to partner discussions. Students may observe that the object (cereal) smells good, are round, are square, or come in a variety of colors.

Super Sort - Kindergarten

Ohio Standards Connection

Mathematical Processes

Benchmarks

- A. Use a variety of strategies to understand problem situations; e.g., discussing with peers, stating problems in own words, modeling problems with diagrams or physical materials, identifying a pattern.
- C. Generate alternative strategies to solve a problem.
- I. Communicate mathematical thinking by using everyday language and appropriate mathematical

- Students share what they notice with the class.
- Tell students:
Now that you have described the cereal, we are going to separate the cereal into two groups. Notice how the cereal is different.
- Show the students the folded construction paper and say,
Put all the cereal that looks the same on one side of the paper and the other cereal on the other side.
- Circulate around the room to observe the students. On the *Pre-Assessment Checklist*, Attachment A, document which students have difficulty with the activity which students respond easily. Ask guiding questions to those students who hesitate in completing the task. For example;
 - a. Point to two pieces of cereal and ask the student to describe each piece.
 - b. Point to the two pieces of cereal and ask,
Are the pieces alike or the same?
If the student responds, “the same,” ask the student to find a different piece. When the student finds a piece that is different, suggest that he/she put that piece on one side of the folded paper and the original piece of cereal on the other side.

Scoring Guidelines:

Use the rubric to determine which students are ready for instruction in this lesson or need intervention activities related to sorting simple sets of objects by one attribute.

Ready for Instruction

The performance shows understanding of how to sort small groups of objects based on one attribute. Sorts the cereal into two groups on the sheet of paper by color, shape or another appropriate attribute without assistance.

Intervention Needed

The performance indicates inadequate understanding of sorting based on one attribute. Needs assistance to sort the cereal.

Post-Assessment:

In the post-assessment, students sort shapes into groups according to various characteristics. They glue the objects onto paper and explain their reasoning to the teacher. Conduct the activity in small groups or individually.

Super Sort - Kindergarten

To prepare for the lesson, copy the checklist *Super Sort*, Attachment B.

Prepare a small, lidded container or re-sealable bag with objects that have several attributes, such as shapes or cereal of different colors, textures, designs and sizes, glue and *Where Does It Belong?*, Attachment D.

- Give each student a container, *Where Does It Belong?* sheet and glue.
- Explain the instructions to the students:
Look at the paper on your desk. On the paper there are two circles side-by-side. Separate your objects into two groups that have different attributes. When you have decided how you want to group your cereal, you may glue them to the paper. I will come around the room to ask you how you sorted your objects.
- Observe the students who have difficulty with the activity and those who respond easily. Ask guiding questions to those students who hesitate in completing the task. For example:
 - a. What should you do to begin the activity?
 - b. Tell me about the objects on your table.
 - c. Describe the objects. How are they the same? How are they different?
- As students complete the task, assess individual students and document performance on *Super Sort*, Attachment B. Ask guiding questions such as:
 - a. Tell me about the work you are doing.
 - b. What attributes did you use to sort your objects?
 - c. Are all the objects in each circle the same?
 - d. How are the objects in each circle different?

Scoring Guidelines:

Use the scoring rubric to assess student mastery of the concept. Those students who struggle with the task may need more individualized instruction and more work with objects with simple characteristics.

<i>On-Track</i>	<i>Approaching Expectations</i>	<i>Support Needed</i>
<ul style="list-style-type: none"> • Sets up activity easily. • Sorts objects into two groups correctly without assistance. • Explains reasons for sorting using mathematical or everyday language. 	<ul style="list-style-type: none"> • Has some difficulty setting up activity. • Sorts most of the objects into appropriate circles. • Explains reasons for sorting but requires assistance to do so. 	<ul style="list-style-type: none"> • Needs help in setting up the activity. • Separates objects randomly. • Explanation does not provide evidence of reasoning used to sort objects.

Instructional Procedures:

Part One

Instructional Tip:

To prepare for the lesson gather the following materials: a lidded box with shallow sides or a drawer from a cabinet; objects with two to three characteristics (example: toy animals of different sizes, shapes of different colors or number of sides, candies, plastic fruit such as

Super Sort - Kindergarten

bananas and apples, cereal with different shapes or colors), index cards, sorting map (such as 11 x 14 $\frac{1}{2}$ inch construction paper folded in half on the width) or hoops.

1. Have the students sit in a semicircle on the floor. Place a sorting mat on the floor. Beside the mat, place a box with a lid or a drawer from a cabinet with a variety of objects for sorting in the box so that all students can see them.
2. Introduce the scenario and ask questions to engage student thinking:
 - a. *When your family cleans the house, what are some things that they do to make the house look nice?* (Allow students time to respond: pick up toys, sweep floors, wash dishes, and make beds)
 - b. *Yesterday, I was cleaning my house. I opened this box (or junk drawer) and oh my, it was a mess!* (Show the students a drawer or box with objects in it.)
 - c. *Tell me what you notice about these objects.* (Allow students to describe the objects.)
3. Tell students that the words used to describe objects are “attributes” of the objects. Write the word “attribute” on the board, sentence strip or chart paper. Write the attribute words for the objects on sentence strips or word cards and tape to the board or chart paper. For example, show students an object such as a red square from the box and ask students for an attribute of that object such as, “it is red”. Write the word red on the card. You also may have to draw a symbol or picture to help them identify the word. Do this for each attribute given.
4. Point to the word “attribute” on the board and ask what it means or ask for an example of an attribute.
5. Say to the students:

Now that you have described the attributes of the objects so well, I would like you to help me decide how I can organize the objects in this box. What does organize mean?

Allow students to explain what they think this means, such as to put all things that look alike together, to put things where they belong, to make the house look nice. If they do not correctly explain, tell them that organize means to put things in special groups or places so that they are easy to find. It also can mean to sort objects into groups that are the same.
6. Direct each student to take an object from the box.
7. Place a sorting mat on the floor in the center of the semicircle. Choose an attribute word card such as “square.” Hold up the card and ask the students to say the attribute. Place the card on the sorting mat. Tell the students:

If you have an object that is a _____, put it on the mat. If your object is not _____, place it on the floor outside or beside the mat.

Ask each student one at a time to place his/her object in the appropriate area. Continue with this activity using several attribute cards on the mat. Repeat as many times as necessary for students to develop a high-comfort level with the sorting skill.
8. To conclude the activity, review vocabulary terms with students by holding up the word cards made earlier in the lesson and discussing the “attributes” of the objects sorted. Have students describe attributes of other objects in the room. Then ask students why they think it is important to organize or sort things according to attributes. Ask them to help you make a list of other things in the classroom that can be sorted and record their responses on a *Two-Column Chart*, Attachment E. Record their responses to this question in the left column. Ask how the items listed can be organized and record suggestions in the right column.

Super Sort - Kindergarten

Part Two

Instructional Tip:

In Part Two of this activity, students sort objects in more than one way. To prepare for this lesson, gather the following materials: objects with three or more attributes such as buttons, shoes, attribute blocks, rocks, or swatches of fabric or wallpaper, and a sorting mat (8 ½ x 14 inch paper folded in half or two hoops side by side). Create small collections of objects with multiple attributes and place in resealable bags, one per pair of students.

9. Direct students to sit in a circle on the floor or carpet. Model the sorting of a set of objects with three or more attributes into two groups using a sorting mat or the hoops. For example, attribute blocks may be sorted by color, shape or size.
10. Ask students which attribute was used to sort the objects.
11. Ask students if there is another way to sort the objects. Allow students to find partners and discuss. Listen to partner discussions and assist students as needed. Select students to share other ways to sort the objects with the class.
12. Select a student to sort the objects. Ask the class what attribute the student used to sort the objects.
13. Direct students to spread out around the room with partners. Distribute collections of objects and the *Two-Circle Sorting Mat*, Attachment C, to students. Tell students to number off as number “one” and “two.” Direct student “one” to sort the objects into two groups. Direct student “two” to determine the attribute used by student “one” to sort. Have partners reverse roles and repeat the steps. If collections created consist of different objects, rotate the collections to different partners. This allows the students to transfer the concept of sorting into many situations. Observe students as they sort, provide assistance as needed and document students who show inadequate understanding of sorting.
14. To conclude the activity, ask students to describe the attributes that can be used to sort the variety of collections. Sample questions include:
 - a. What attributes could you use to sort this set of buttons?
 - b. How many buttons would be in each of the groups?
 - c. Can you sort the buttons into more than two groups? What attribute could you use?

Differentiated Instructional Support:

Instruction is differentiated according to learner needs, to help all learners either meet the intent of the specified indicator(s) or, if the indicator is already met, to advance beyond the specified indicator(s).

- Sorting objects by using multiple characteristics challenges young students. If students show adequate understanding of sorting according to one characteristic in the pre-assessment, introduce multiple-characteristic sorting to students using Venn diagrams. For example, have students sort attribute blocks using the attributes red and triangles.
- Students who show inadequate understanding during or after instruction need intervention to develop the concept of sorting. Have the students describe one object in their own words. Compare this object with other objects one at a time and ask if the object is same or different. Ask how the object differs and model how to use a sorting mat. Vocabulary development may be a barrier for describing objects. Experiences such as this can create a context for students to build vocabulary.



Super Sort - Kindergarten

- For visually impaired students, use objects with a variety of textures such as sandpaper, wallpaper, waxed paper or fabric. Have students sort the objects using the sense of touch.

Extensions:

- Sort the students by characteristics of their clothing, shoes, hair or eyes. Begin by sorting six students into two groups, but do not tell students how they are being sorted. Ask several students to which group they think they belong. Have students go to the group. Observe students and guide them to the correct group if they are incorrect. Use this activity to line students up to exit the room throughout the day or year.
- Search for Web sites that contain sorting activities and allow students to practice sorting.
- Sort objects or organisms in nature by collecting items such as flowers, leaves, sticks, etc., while taking a nature walk or trip around the school. Sort the items at the end of the trip.
- After the students sort the collections in Part Two of the lesson (Instructional Procedure 13), have the students do a gallery walk around the room to observe the methods students used to sort.

Home Connection:

Send *Home Super Sort*, Attachment F, which includes two activities for students to practice sorting and identifying collections of sorted objects at home.

Interdisciplinary Connections:

Social Studies

Social Studies Skills and Methods

Benchmark C: Communicate information orally, visually or in writing.

Indicator 2: Sort objects or pictures according to appropriate criteria.

Indicator 3: Compare similarities and differences among objects or pictures.

In the Super Sort activity, students will sort objects according to attributes. Students learn to identify how things are alike or different.

Science

Physical Science

Benchmark A: Discover that many objects are made of parts that have different characteristics. Describe these characteristics and recognize ways an object may change.

Indicator 3: Describe and sort objects by one or more properties (e.g., size, color and shape).

Scientific Inquiry

Benchmark B: Design and conduct a simple investigation to explore a question.

Indicator 3: Use the five senses to make observations about the natural world.

Indicator 10: Make new observations when people give different descriptions for the same thing.

Materials and Resources:

The inclusion of a specific resource in any lesson formulated by the Ohio Department of Education should not be interpreted as an endorsement of that particular resource, or any of its contents, by the Ohio Department of Education. The Ohio Department of Education does not endorse any particular resource. The Web addresses listed are for a given site's main page,



Super Sort - Kindergarten

therefore, it may be necessary to search within that site to find the specific information required for a given lesson. Please note that information published on the Internet changes over time, therefore the links provided may no longer contain the specific information related to a given lesson. Teachers are advised to preview all sites before using them with students.

For the teacher: chart paper, sentence strips or word cards, drawer or box with assorted items, large floor sorting mat or two hoops

For the student: small, lidded containers such as margarine tubs or resealable bags, cereal with two colors and/or shapes such as spheres and squares

Vocabulary:

- alike
- attributes
- different
- organize
- same
- sort

Technology Connections:

- Have students explore Web sites that contain sorting activities. Choose Web sites endorsed by professional mathematics and science organizations. Search for lessons by grade level and/or standard.
- Introduce students to computers by exploring the computer keyboard and discovering its organization.
 - a. Make drawings of the keyboard and duplicate them on tag board.
 - b. Ask parents or organizations to donate used or outdated keyboards to the class. Have enough keyboards so students can work in groups of two to three.
 - c. Take your students on a "field trip" to the computer lab in the school. Encourage students to study the keyboard without touching the keys. Ask them to share their observations or what they know about computers. Guide a discussion about the logical arrangement of the keys. For example, all the numbers are at the top (or on the side), letters are in the center of the keyboard, and there are special keys on the sides.

Research Connections:

Cawletti, Gordon. *Handbook of Research on Improving Student Achievement*. Arlington, Va.: Educational Research Service, 1999.

Principals and Standards for School Mathematics. The National Council of Teachers of Mathematics, Inc., Reston, Va.: 2000.



Super Sort - Kindergarten

General Tips:

- When selecting materials/objects for the sorting activity, avoid sharp or small objects.
- If using food items for the sort, check students' records to identify students with food allergies (allergic reactions to peanuts) or students who are diabetic. Consider using non-food items only.

Attachments:

Attachment A, *Pre-Assessment Chart*

Attachment B, *Super Sort Post-Assessment Chart*

Attachment C, *Two-Circle Sorting Mat*

Attachment D, *Where Does It Belong?*

Attachment E, *Two-Column Chart*

Attachment F, *Home Super Sort*



Super Sort - Kindergarten

Attachment A Pre-Assessment Chart

Directions: Place checkmarks beside the names of students who need assistance with the concept. Place an M in the boxes to indicate mastery of the concept.

	<i>Date</i>	<i>Date</i>	<i>Date</i>	<i>Date</i>	<i>Date</i>	<i>Date</i>	<i>Notes</i>
Name							
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							



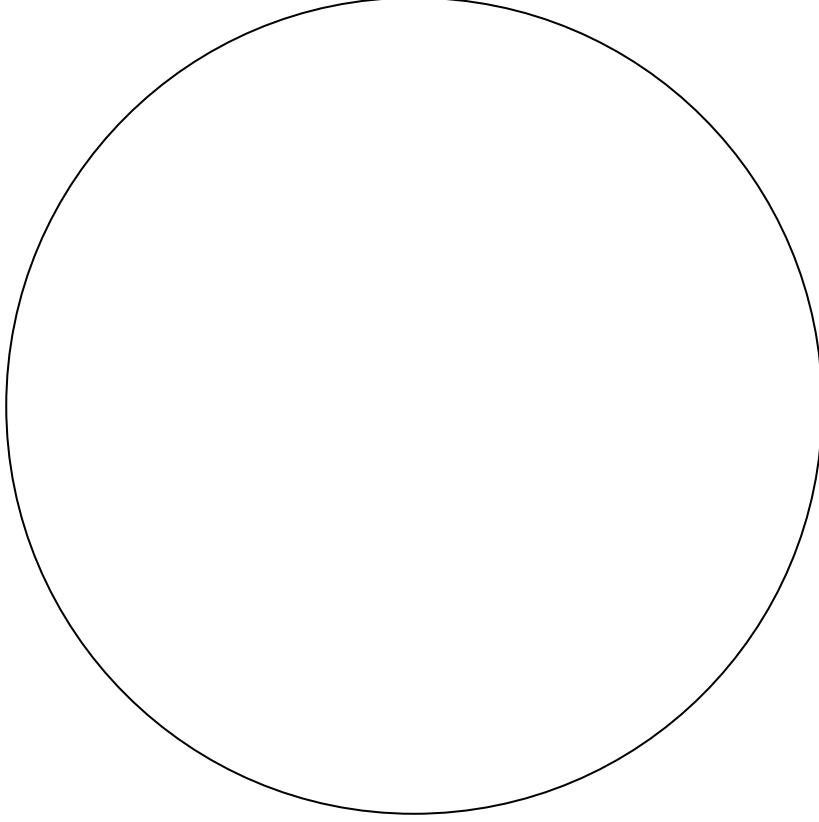
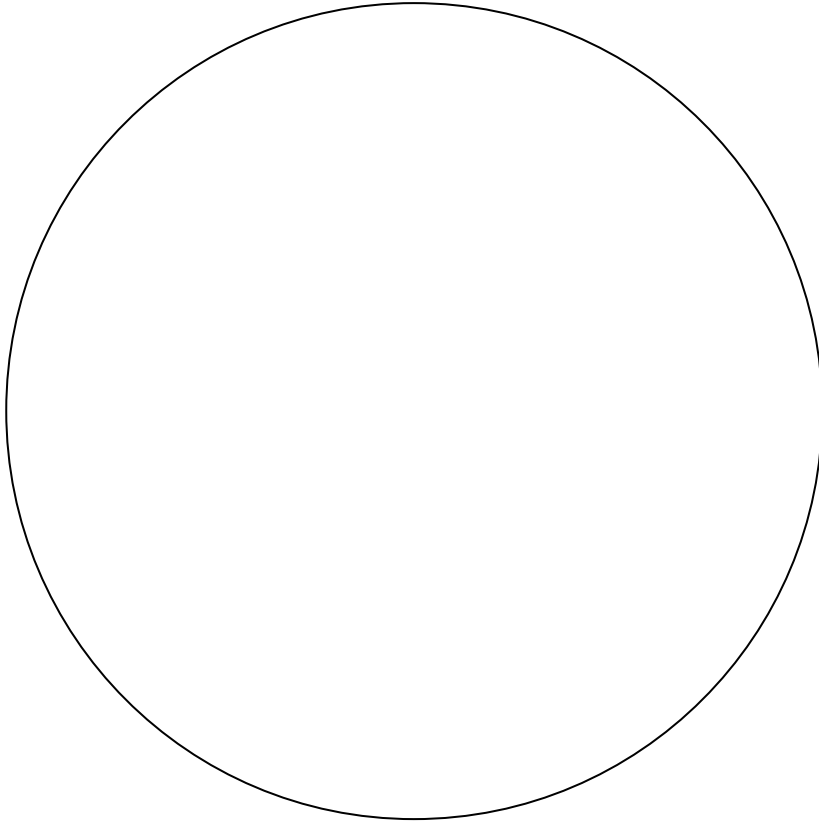
Super Sort - Kindergarten

Attachment B Super Sort Post-Assessment Chart

Student Name	2 <i>On-Track</i>	1 <i>Approach Expect.</i>	0 <i>Support Needed</i>	Notes
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				

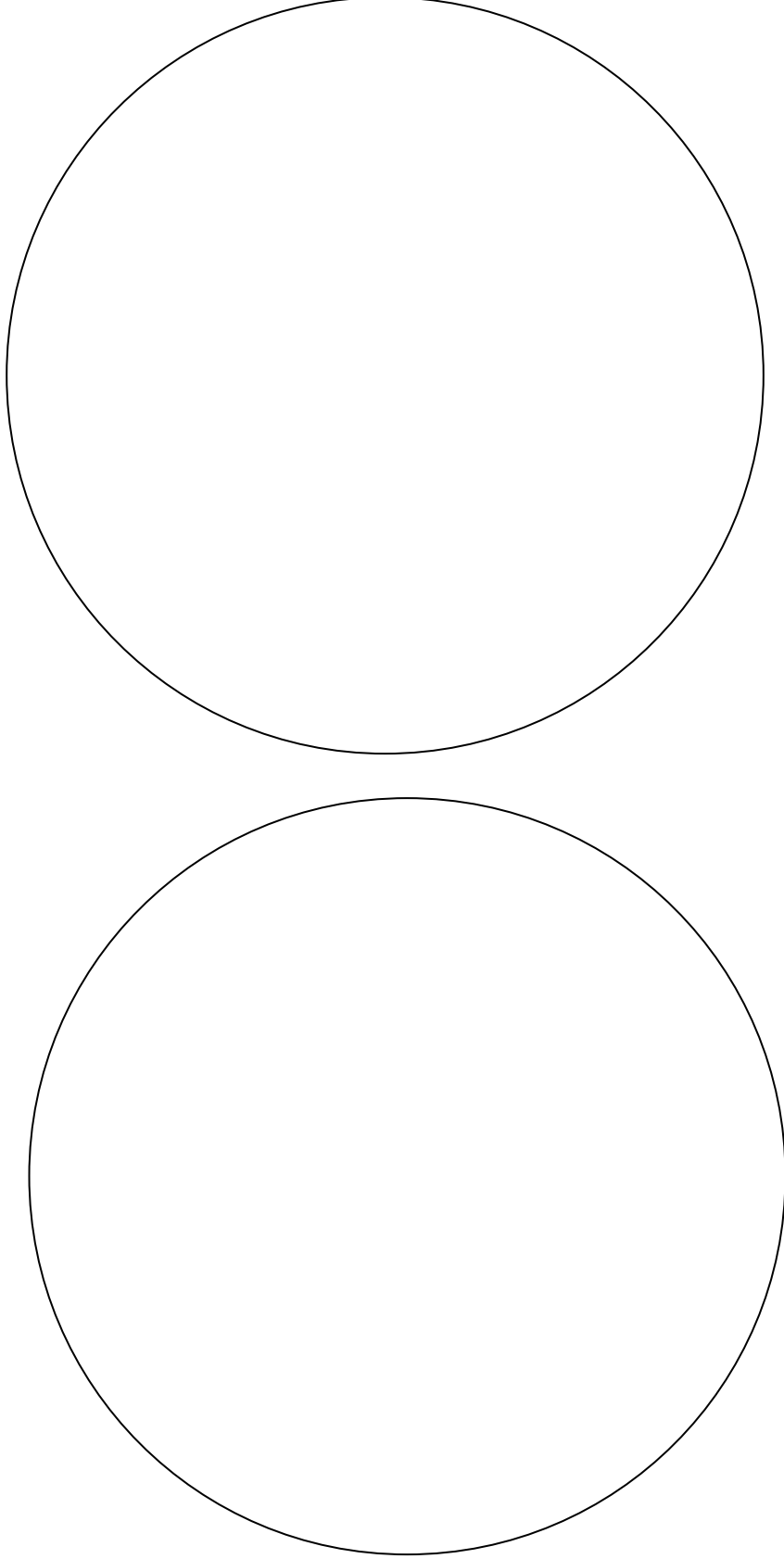
Super Sort - Kindergarten

Attachment C Two-Circle Sorting Mat



Attachment D Where Does It Belong?

Name _____





Super Sort - Kindergarten

Attachment E Two-Column Chart

Things to sort in our class

How we will sort them

Things to sort in our class	How we will sort them



Super Sort - Kindergarten

Attachment F Home Super Sort

Name _____

Dear Parent/Guardian,

We have been learning how to sort objects using *attributes* such as size, shape and color. You can help your student by sorting objects at home.

Part 1 Please select one or more of the collections below to practice sorting.

- Silverware (spoons and forks, size of spoons and forks)
- Cups (glass and plastic, with and without handles, colors, size)
- Marbles (one color and multi-color, size, metal or glass)
- Buttons (color, number of holes, size)
- Food (canned and bagged, fruit and vegetables)
- Clothing (types and color of socks and shirts)

- Other _____

Part 2 We use sorting to help us organize our belongings. Find places in your home where objects are organized such as the type of towel (bath towel, hand towel and washcloth). Take your student on a scavenger hunt for objects that are sorted. What sorted objects did your student find?

Please sign and return this form to school by _____.

Thank-you,

We have completed the home activities for sorting.

(Parent signature)