

## Sample Science Learning Plan

### Big Idea/ Topic

Physical Attributes

### Standard Alignment

**SKP1. Obtain, evaluate, and communicate information to describe objects in terms of the materials they are made of and their physical attributes.**

- Ask questions to compare and sort objects made of different materials. (Common materials include clay, cloth, plastic, wood, paper, and metal.)
- Use senses and science tools to classify common objects, such as buttons or swatches of cloth, according to their physical attributes (color, size, shape, weight, and texture).
- Plan and carry out an investigation to predict and observe whether objects, based on their physical attributes, will sink or float.

**SKE2. Obtain, evaluate, and communicate information to describe to describe the physical attributes of Earth materials (soil, rocks, water, and air).**

- Ask questions to identify and describe Earth materials – soil, rocks, water, and air
- Construct an argument supported by evidence for how rocks can be grouped by physical attributes (size, weight, texture and color).
- Use tools to observe and record physical attributes of soil such as texture and color.

**Crosscutting Concepts: Patterns, Scale, Proportion, and Quantity**

#### Physical Attributes in Kindergarten

[SKE1, 2](#); [SKP1, 2](#); [SKL1, 2](#): The important skill of sorting and classifying objects using physical attributes is prominent in each of the standards in kindergarten. In kindergarten, students will observe, compare, and contrast. Students need sufficient practice in asking questions and developing models to classify objects: those being seen in the sky (day/night/both), rocks based on their physical attributes (size, weight, texture, color), soils (texture/color), objects based on materials they are made from (cloth, clay, plastic, wood, paper and metal), common objects based on physical attributes (color, size, shape, weight, texture, sink/float), based on the relationship between an object's physical attributes and its resulting motion, objects as living and nonliving, grouping plants and animals according to their features (also noting similarities/differences between offspring and parents). Similar skills are addressed in math when students describe shapes and work with sets of objects. For the purposes of this lesson we are focusing on SKP1 and SKE2.

At home, science standards for kindergarten can be supported as students develop models to communicate the changes that occur in the sky during the day, as day turns into night, during the night and as night turns into day using pictures and words. Rocks, soil, water, and common objects should be used for sorting/classification. To study motion when force is applied, students can use personal toys, canned products, etc.

## **Other Content Area Standards:**

### **ELA**

**ELAGSEKW2:** Use a combination of drawing, dictating, and writing.

**ELAGSEKW8:** With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

**ELAGSEKSL1:** Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.

**ELAGSEKSL4:** Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.

### **Math**

**MGSEK.CC.4** Understand the relationship between numbers and quantities; connect counting to cardinality.

- a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. (one-to-one correspondence)
- b. Understand that the last number name said tells the number of objects counted (cardinality). The number of objects is the same regardless of their arrangement or the order in which they were counted.
- c. Understand that each successive number name refers to a quantity that is one larger.

**MGSEK.CC.5** Count to answer “how many?” questions.

- a. Count to answer “how many?” questions about as many as 20 things arranged in a variety of ways (a line, a rectangular array, or a circle), or as many as 10 things in a scattered configuration.

**MGSEK.CC.6** Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.

**MGSEK.MD.1** Describe several measurable attributes of an object, such as length or weight.

- For example, a student may describe a shoe as, “This shoe is heavy! It is also really long!”

**MGSEK.MD.2** Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute and describe the difference.

- For example, directly compare the heights of two children and describe one child as taller/shorter. Classify objects and count the number of objects in each category.

**MGSEK.MD.3** Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.



## Instructional Design

Building community is important in every classroom. For this study, consider asking every child to bring a favorite toy to class (face-to-face or virtually). Let students take turns sharing their toy with their classmates. For large classes, you will want to give students different days to share. Then ask students to consider how they may group the toys shared by some common characteristic. You could ask them to imagine how they might be grouped in a store? For example, all the stuffed animals may be on an aisle together, all the cars together on another, all the sports equipment together, etc. Let them know that they are going to learn together about different objects, the materials they are made of, and practice organizing them based on common characteristics.

Another fun way to connect and focus on the physical attributes of objects, is to play “I Spy.” This could be a fun way to warm-up/open class during this study. In a synchronous, virtual setting. Be sensitive, as it may not be necessary or comfortable for students to have computer cameras on. Please follow your district’s guidelines. Make sure you have lots of objects viewable in your screen that could be used.

### Part 1

#### Engage

**Phenomenon:** Will it sink or float?

Show students a photo of an [aircraft carrier ship](#).

This [photograph](#) shows a very large aircraft carrier ship. This ship is longer than 3 football fields and taller than a building with 24 floors. It is home to over 90 airplanes and more than 6000 people. What do you think the boat looks like on the inside? What materials do you think were used to make the boat? How many planes are parked on the ship? How does the boat stay floating? What other objects can float? Why do some objects float and other objects sink?

*Teacher note: A common misconception among students is that light objects float and heavy objects sink. At this age, we can explain that air helps things to float in water without going into a complex explanation of density. Students will also note that the shape of the object makes a difference in sinking and floating. A ball of clay may sink, but when the ball is reshaped, it can float.*

Students obtain information from examining pictures of different kinds of boats. Students will examine the photographs and make observations about the size of the boat, the shape of the boat, and the type of materials used to construct the boat.

Ask students to brainstorm a list of materials used in a ship’s construction.

The teacher will give each student a toy boat and a bucket of water to investigate. **Currently, students should not be sharing materials or working closely together in groups.** Students will observe what happens when they put the boat in water.

*Teacher should ask questions to guide students’ observation: What happened when you put the boat in water? What does it mean to float? What does it mean to sink? Which material was used to make this boat? What other materials could make boats?*



In a whole group, the teacher will guide students to develop a list of materials that are used to construct boats.

**Plugged:** Teacher will demonstrate and encourage students to follow along at home.

**Unplugged:** Provide a photo of the [aircraft carrier](#) for students to observe. Ask parents to assist their children with experimenting with sink/float in a sink or shallow tub/bowl. See the sample [Dear Parent/Caregiver letter](#).

### **Exploring**

Students carry out the following hands-on investigation to obtain information about the properties of different materials. Students will group materials with similar attributes and create a classification system for sorting these objects.

Teachers will provide each student with a large plastic bag full of a variety of different materials. Examples of these materials include paper, metal, plastic, cloth, styrofoam, wood, and clay. Without giving students sorting guidelines, ask them to sort the materials into different categories. Once students have completed this sort, ask students to repeat the activity several more times using a DIFFERENT way to sort them each time.

*Teacher Note: When choosing materials to put in the bag, try to select materials that show variety. For example, you could put several different types of paper in the bag: a piece of white paper, a piece of yellow construction paper, a piece of colorful wrapping paper, a piece of a brown paper bag, a piece of newspaper, etc. Repeat this for each type of material.*

Students will explain their reasoning for how they classified different materials. Once students have sorted their materials, they should have the class try and guess WHY they sorted them the way they did and then they can discuss why they sorted them the way that they did. Students may have sorted them by color, by size, by shape, by function, by texture, by material, etc. Students should develop a “rule system” for how each item was sorted and should explain their reasoning.

The teacher should explain that different objects are made from different materials. The teacher should specifically name plastic, paper, clay, metal, styrofoam, cloth, and wood. Teacher should show examples of each of these materials and point out other examples around the classroom. Finally, students will complete one final sort and to put them into categories based on the material. Have them count the number of objects in each of their groups.

**Plugged:** Materials could be shown to students and the sorting could be done as a whole group discussion. Students could use an online platform to drag and drop pictures of items into groups. There are many great books to read aloud, [The Button Box](#) by Margarett Reid is one such book. This one may be relatable to many families as it starts with something many of us or our grandparents have, a collection of buttons.

**Unplugged:** Send a small collection of items home or ask parents to gather various items to use with their students to replicate this activity. Suggest they look for [The Button Box](#) and other similar type books via a safe book check out from the school or [local public library](#). Also encourage families to play the sorting game – sort objects and ask other to guess why you sorted as you did. Sorting could be done while doing laundry or sorting recyclables. Help families make easy connections.

### **Explaining**

Students revisit the list of materials that they came up with during the engage segment and discuss which materials they will test to see whether they sink or float. Students can add any additional materials that they wish to test.



*Teacher Note: Materials include aluminum foil (metal), wooden craft sticks, styrofoam cup/plate, and clay.*

Students will perform a sink or float test on various materials. They will keep a record of which materials float in water and which materials sink in their journal or on the provided [T-Chart](#). Let them see that some materials will float if put in the water one way but sink if put in the water a different way. Have them count the number of objects in each column.

As a teacher demonstration: Try comparing a can of diet soda versus regular soda! The difference is related to the amount of sugar in each one. Artificial sweeteners weigh less than sugar.

### **Elaborating**

View the photo: [Loaded cargo ship](#)

The photo is also included [below](#).

Cargo ships are an important tool that allow materials and goods to be shipped to places all around the world. It is important to make sure that a ship is well built to hold a lot of weight. Many of these ships pass through the Port of Savannah and can be viewed along River Street in downtown Savannah, GA (you may want to show them on a [map](#) where Savannah is located). We are going to design a cargo ship. We need to test to see how much cargo our ship will hold. Which material do you think will work the best at constructing a cargo ship? How will you construct your boat?

Students will develop a plan to construct a boat using materials that will float. Students will select a boat building material that floats. Students will design this boat in their journal prior to building their boat.

Students will test their boats to see how much cargo they will hold. Students should add cargo (objects such as small wooden blocks, paper clips, counters) one piece at a time until their boat sinks. Allow students multiple opportunities to redesign and retest their boat designs. Teachers help guide students to understand how their boat may have failed and how they could improve their design. Students will record the number of pieces of cargo on a sticky .

The teacher will use a data table for students to display their results. Once all students have tested their cargo boats and recorded their results, teacher will lead an analysis of the results to see which material used made the best boat. Teacher should circle the highest numbers and lead a discussion about why that material might have worked the best. The teacher will use a data table for students to display their results. Once all students have tested their cargo boats and recorded their results, teacher will lead an analysis of the results to see which material used made the best boat. Teacher should circle the highest numbers and lead a discussion about why that material might have worked the best. Encourage multiple trials and designs. Build, test, repeat!

**Unplugged:** The activity above is mentioned in the [Dear Parent/Caregiver letter](#). Parents should use whatever materials are readily available. The goal is that students explore and observe.

### **Evaluation**

In their journals, have students complete the following Claims/Evidence/Reasoning based on the test results of their class.

*I think that \_\_\_\_\_(material) is the best for making boats because it held \_\_\_\_\_ pieces of cargo when our class tested it.*



Have them note which physical property (color, size, shape, weight, and texture) is most important in building a boat that floats and can hold cargo, and why they think this.

### More Exploration – Extensions for Class or Home

Young students need many opportunities to sort objects and play games that require them to observe physical attributes. This is critical for both science and math.

**Engage:** Watch or read a book like, [Pete the Cat: I Love My White Shoes](#). This book will also help young children with colors.

**Explore:** You can do this as a class activity, but it really works well at home. Ask students, “Do you have shoes at home? How do you organize them?” It may be by owner, or purpose. Suggest students look for other ways to organize the shoes. Maybe some have laces, others have buckles and some Velcro. Maybe by size or color. There are many different ways!

**Explain:** This activity will elicit language. Allow students the opportunity to share why they organized their shoes the way they did.

**Elaborate:** Have them count the number of items in each group/set. Have students evaluate the explanation of others. Do they understand their classmate’s reasoning? Do they have suggestions or comments to share? How can they relate what one student’s chose to do to their own choices or those of others? Are there multiple acceptable ways to sort the shoes?

**Evaluate:** Listen to students’ explanations and conversations. Have students draw their shoes and how they grouped them or photograph them and submit.

**Unplugged:** Students can do this activity without having access to the book. However, encourage families to utilize safe book exchanges from your school library and [public libraries](#). Sorting familiar objects at home is suggested in the [Dear Parent/Caregiver Letter](#).

## Part 2

### Engage

**Phenomenon:** Not all rocks are the same. Not all soils are the same.

Now that students have had some time to explore with various objects in the home, have them focus on natural Earth materials.

Teacher will show students the following video: [Bucket Wheel Excavator](#)

The materials that come from the Earth have different properties. The earth is made of rocks, soil, air, and water. Teacher will ask students, “What do you think we will find if we dig into the Earth?” “What did you notice from video.” You may want to share a scenario about digging in the dirt to plant some plants and noticing that the top layer of soil was black, but below that the soil was orange. Are all soils the same color?

Students will go outside and become “excavators”. Students will be given a bucket and a small hand shovel.

Teacher Notes: Make sure you have permission from the administration to dig in the school yard. Let parents know ahead of time that students will dig in dirt so they can prepare their child for this (clothes, etc.).



Students will explore the bucket full of earth materials that they collected. Have large sheets of newspaper to put on the floor and have students put their soil and rocks on the newspaper for sorting. Students will group items that are similar. Students will describe their reasoning for sorting.

In their journals, students will draw and label a picture of the items they found while digging in the earth.

**Unplugged:** Encourage families to assist their students in safely digging up small samples of soil and rocks. A spoon can work as a shovel. Small samples will be enough to work with. Provide the [Soil Samples](#) handout to use as well.

### **Exploring**

Students will explore and sort earth materials based on their similarities and differences. Students will sort the earth materials into a pile of soil and a pile of rocks. Have containers for transporting any live specimens back outside

Students will use magnifiers ([how to make your own](#) – you may want to print and include in the parent packet for unplugged students) to closely observe the particles of the soil. Students will observe that soil is made up of dirt, small rocks, and other natural materials like sticks, leaves, and roots. Have students put a bit of soil on a plate. Students will use a dropper to add water to their soil and observe how the texture of the soil changes. Students will observe how water makes the soil moist. Students may observe that soil contains both living (worms, insects, seeds) and non-living materials. Students will record their observations in their journal. Students should complete the following sentences:

Soil looks\_\_\_\_\_. Soil feels\_\_\_\_\_. Soil smells\_\_\_\_\_.

In their journals, students will draw and label pictures of the items that they found in their soil sample. This labeling can include living/nonliving. Give students a piece of paper and ask them to see if the soil or rocks make marks on the paper. Have them notice the colors and sizes of the particles.

**Unplugged:** Soils and rocks are typically easy to find or at least observe in most neighborhoods. Students can do this at home and record in their journals to share via email, photo, phone call, etc. (as determined by your school/district).

### **Explaining (formative assessment)**

Students will take the pile of rocks that was sorted from their earth materials bucket in the previous step and examine them closely for similarities and differences.

- Each student will select a rock from their bucket, closely examine and record the features of their rock.
- Students will draw a detailed and accurate picture of their rock including the rock's color.
- Students will weigh their rock in a bucket balance using a nonstandard weight in the opposite bucket (blocks, teddy bear counters, unifix cubes).
- Students will measure the length of their rock in non-standard measurement.
- Students will rub their rock on a piece of paper to see if it marks the paper.
- Students will submerge their rock into a small container of water to see if it floats and if the color changes when it is wet.
- Students will observe the texture of their rock (smooth, bumpy, rough, etc.).

Students will work compare their rock to other students' rocks. Each student will explain the physical attributes of their specific rock and what makes their rock unique. Have students put a small piece of tape on the bottom

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of their rock with their initials. Give out the student drawn pictures and information about the rock to random groups and see if they can locate the rock. Have them challenge the original rock “owners” to revise details of their information for better accuracy.

**Plugged:** After students have explored on their own, they can watch this [video](#) to review.

**Unplugged:** [Rock Cards](#) can be provided to families to play the identification game described above.

### Elaborating

Have students think about living things? Are all plants the same? All animals? Are there various ways they could group these things? Let students pick a topic to explore, sort and share.

A sample activity that involves creating a class book, based on [Five Creatures](#) by Emily Jenkins, is found [here](#) and can be done without access to the book. There is an informative video that can be shared with plugged families, and the link is included in the “Engaging Families” section [below](#).

### Evaluation

Student conversations, drawings, and actual performance (sorted groupings) can all be used to evaluate student understanding of this concept. Additionally, you may want to conduct a [one-on-one conference](#) with students giving them a set of objects and asking them to sort them and explain. Then mix them up and ask them to do it in another way.

## Evidence of Student Success

- Students will ask questions and use senses.
- Students will explore the properties of different objects using their senses.
- Students will compare how the materials are similar and how they are different.
- Students will group objects based on their attributes and explain their reasoning.
- Students will test objects for buoyancy and apply their knowledge to solve a problem.
- Students will go outside and observe natural earth materials.
- Students will collect samples and sort them by type of Earth material.
- Students will examine and sort rocks based on their physical attributes.
- Journal responses

## Student Learning Supports

The goal for science education in the state of Georgia is as follows: All Students, over multiple years of school, actively engage in science and engineering practices and apply crosscutting concepts to deepen their understanding of the core ideas in these fields.

The learning experiences provided for students should engage them with fundamental questions about the world and with how scientists have investigated and found answers to those questions.

This lesson includes the disciplinary core ideas, science and engineering practices and crosscutting concepts to actively engage students in exploring science concepts with real world topics. As part of the vision we must support the inclusion of all students in science learning.

Some **general** strategies to include all students in the learning process of science are as follows:

- Provide consistent and positive feedback.
- Keep directions brief and clear.





- Make sure parents and students know schedules, due dates, requirements, expectations, and how assignments/tests are going to be collected.
- Share evaluation results in a timely manner to students and parents.
- Package assignments in a way that students know the sequence, what is required, when it is required, what is available as choice and what is for fun.
- Provide/encourage organizational strategies such as where to work, store work, when and where to turn in assignments, graphic organizers, etc.
- Provide reminders of important dates and requirements.
- Go over notebook and journal ideas and share your entries with students so they can see what you expect.
- Allow dictation and/or text to speech software programs and tools
- Check in with students by phone or online to answer questions, give reminders, and check progress.
- Provide parents with updates on progress and upcoming assignments. Communicate often.
- Provide resources that students can access offline.
- Allow students to give information orally or in drawings.
- Model expectations and demonstrations in video/online/phone.

Some strategies specific to this lesson are as follows:

**Performance expectations for instruction:**

1. The teacher should provide information to students in various formats to reach as many students as possible.
2. The students should be given adequate time to complete each part of the lesson.
3. The students should be allowed to express their knowledge in various formats.
4. The teacher should be sure to provide multiple ways for the students to communicate their knowledge of the material.

**Part 1**

**Engage Sink & Float:**

1. The teacher should show an image of an aircraft carrier to students that are face-to-face, plugged, and unplugged.
2. The teacher should consider showing a video that gives a tour of an aircraft carrier.
3. The teacher should consider making the measurements more real to the students. The teacher can consider taking the students outside and having the students visualize the school stacked on top of itself 24 times (if the school is only one story). Then have students observe the school yard, an aircraft carrier is about an acre or so long which is around the length of most schools plus the parking lots (adjust accordingly to your school).
5. Another way for the teacher to make scale comparisons is to use images to compare the sizes. The teacher can do an image of something everyday that is small and a larger picture of a sky scrapper to show the large size difference between the two.
6. The teacher should practice making observations with students. The teacher can ask them to make observations about the school yard, their peers and things inside the school.
7. The teacher should consider doing a demo of clay sinking and then ask the students for suggestions that might make the clay float.
8. The teacher should consider scale when giving images of different kinds of boats. Students need assistance visualizing how big the aircraft carrier is compared to the other boats. So, the teacher should consider giving images that provide scale as well as images to make observations.



9. The teacher should consider having students watch a video clip of how ships are made.
10. The teacher should consider giving students images of several materials then the students can discuss with a partner or as a class how the materials might or might not work for building a boat.

### **Exploring Sink & Float:**

1. The teacher should consider helping students hypothesize which materials will float. Then the students can test these hypothesize before sorting the materials.
2. The teacher should use guiding questions to help students sort materials. The teacher should consider providing parents with a list of questions that could be used to assist students in sorting materials.
3. The teacher should have the students explain their reasoning for sorting materials in the way they did. Then the students can explain their sorting to the class.
4. The teacher should consider providing samples of objects that are made of many different materials.
5. The students can generate a list of things that they encounter every day that are made of the materials discussed. This is used to help make connections to how different objects are made of different materials.

### **Explaining Sink & Float:**

1. Ask students why it is important that the materials that are used to build ships float?
2. The teacher should consider giving students images of the items that they are doing a sink-float test on and then have the students sort the images into piles as they do the test. Another option, for students that are at a distance or to help students not share the image cards, would be to have students draw the items that are used in the sink/float test in a t-chart to show which items sink and which items float.
3. The teacher can consider having students share a list of the things that they tested in the sink or float experiment. This can add to student understanding of the different materials that could be tested. This may be especially valuable for classes that are at a distance because each household may have a different set of items to test.

### **Elaborating Sink & Float:**

1. The teacher should use probing questions to help students select some materials as they work on building their boat.
2. The teacher can also be encouraging while they work on their design.
3. The students should draw the boat design and attempt to differentiate between the materials they are using. The teacher can model creating a key for their design.
4. The teacher should have students record data for every test they complete on their boat.
5. The teacher will need to explicitly explain and model how to record data.

### **Evaluating Sink & Float:**

1. The teacher may need to model using the sentence frame to assist students in explaining their ideas. Also, consider having students share their idea with the class.
2. The teacher should consider letting struggling students verbally explain as appropriate.
3. Students should have the opportunity to share their knowledge in multiple formats. These formats could include in writing, video or audio recording. Students can use the sentence frame in any of the above formats to share their knowledge.

## **Part 2**

### **Engage Earth Materials:**

1. The teacher should ask students if they have ever seen soil being excavated or someone digging a hole in real life.
2. The teacher should elicit ideas from students about what might be in the soil.



3. The teacher should show students to how to use the tools to dig in the soil and provide guidelines of how and where the tools should be used.
4. If permission is not given to dig on school campus, then the teacher can consider making a dirt mixture themselves. The teacher can use potting soil, some red dirt, some rocks and some organic matter gathered from outside (this can be leaves, broken up sticks, pine straw, etc.).
5. The teacher should provide students a template to draw and write their observations.

#### **Exploring Earth Materials:**

1. The teacher should give students directions of where to put soil and where to put rocks.
2. The teacher should give students a place to draw their observations and then a place to complete the sentences.
3. The teacher should give students words to use to label the things that they find in the soil.
4. The teacher may need to explicitly show students what they are looking for a seeing in the soil.

#### **Explaining Earth Materials:**

1. The teacher should have students make observations about what they notice in the bucket of rocks.
2. The teacher can then lead a discussion about the characteristics and make a class list of what they see.
3. The teacher should provide an organizer to students so that students can record their observations in the form of pictures and words as appropriate.
4. The teacher will need to explicitly show students how to weigh and measure the rocks. This may, also, require some assistance from the teacher as the students move through this part of the lesson.
5. The teacher should provide clear and consistent guidelines for group work.
6. The teacher should have students provide each other feedback on the description of the rocks and what needs to be added to make it easier to identify the rock.

#### **Evaluating Earth Materials:**

Students may need additional time to complete their assignment.

## **Engaging Families**

- [Georgia Home Classroom](#)
- [Sample Learning Menu Strategies for K-12 Science](#)
- [An Instructional Video on Sorting with Young Children Using Literature](#)



Dear Parent/Caregiver:

The important skill of sorting and classifying objects using physical attributes (color, size, shape, weight, texture, what things are made of, and do they sink or float) is prominent in each of the science standards in kindergarten. Additionally, sorting and counting is an important math skill. You do not need any special science or math manipulatives for this.

Here are a few fun ways you can support this type of learning with your child at home:

Find a collection of things like buttons, socks/laundry, coins, recyclables, canned goods, shoes etc. in your home, and let your child determine and sort them into groups based on some common characteristic. You can make this a game in which you take turns putting objects into groups and the other players try and guess why you organized/sorted them as you did. You will be amazed at all the different ways you can sort the same set of items!

Another fun game to play with your child to help with this skill is “I Spy.” Playing games like “I Spy” help students notice physical attributes and use attribute language:

I spy something red. I spy something round. I spy something small.

Children enjoy testing objects to see if they will sink or float. Together as a family collect an assortment of objects you do not mind getting wet. Have children make a prediction about which objects they think will sink and which they think will float. Place the objects into groups based on whether they sank or floated. Some objects will sink when you change their shape. Try to make a boat that will float. Now add objects like paperclips or penny to the boat. How many did the boat hold before sinking? Have students answer:

*I think that \_\_\_\_\_(material) is the best for making boats because it held \_\_\_\_\_ pieces of cargo when we tested it.*

After experimenting with common household items, we want students to begin to think about Earth materials like rocks and soils. Have students begin to observe rocks and soils in the area. They should notice color, shape, size, and texture. Rock Cards and Soil Sample handouts are provided to use if real objects are not available or accessible. The Rock Cards can be used to have each player pick a favorite rock. They should not tell other players which rock they chose but should observe it carefully so that they can describe it. Place on the cards face up on a table. Players take turns describing their rock. Other players try to guess which rock was selected.

Some materials to gather for this study are:

- Plastic bath toys
- Water (sink or shallow container)
- Samples of objects made of different materials (paper, plastic, wood, metal, etc.)
- Materials a student could use to make a boat (empty bottles/cartons, aluminum foil)
- Pennies or paperclips (or small objects like locking toy blocks) to put in “boats”
- Journal or paper for keep up with wonderings and results/drawings
- Rocks and soils (or attached handouts: **Rock Cards and Soil Samples**)
- A magnifying glass for observing rocks/soils (optional)



Aircraft Carrier Photo



## T-Chart Sink or Float

Did the object sink or float? List or draw the object under the appropriate title.

SINKS

FLOATS

SINKS	FLOATS

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## Cargo Ship

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Rock Cards

1



2



3



4





5



6



7



8



SOIL SAMPLES



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