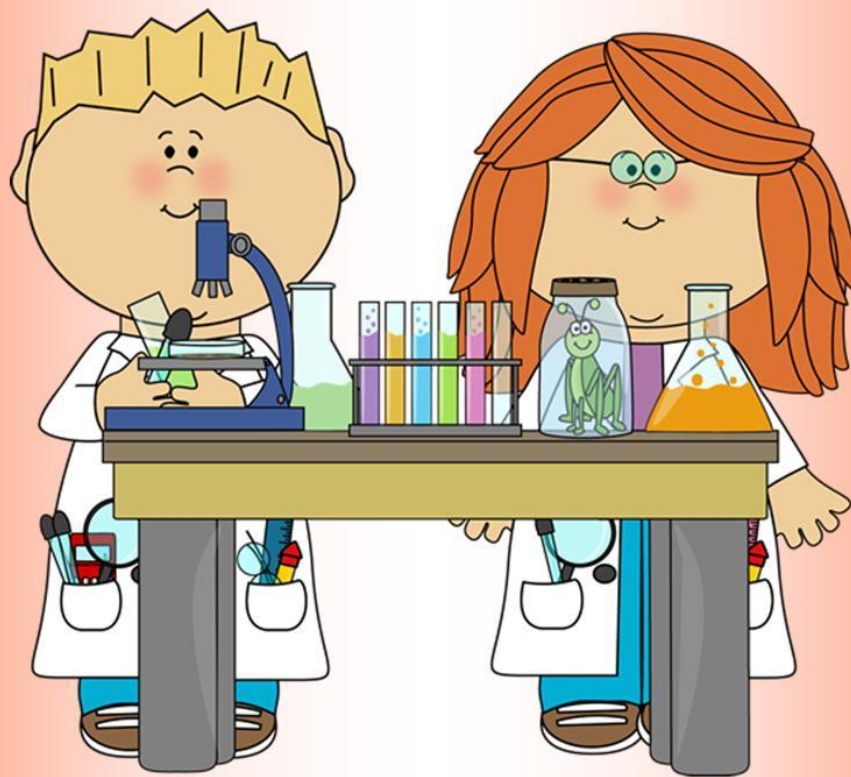


Simple Science Explorations

Grades K-2



Hands-On Minds-On Publications

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SIMPLE SCIENCE EXPLORATIONS

#	Activity/Description
1	Buoyancy: The students will make predictions and follow the scientific method for problem solving. Students will determine which kinds of items will sink and which ones will float (remain buoyant) in water.
2	Senses: Students will identify that the 5 senses and the sense organ associated with each. Students will also use their sense of hearing to listen to different sounds.
3	Sound: Students will use their sense of hearing to listen to different sounds and pitches. Students will identify the ear as the sense organ associated with sound. Students will also learn ways to protect their hearing.
4	Animal Homes: Students will learn that animals are adapted to living in different types of environments. After listing different animal homes, students will take part in making a simulated spider web.
5	Food Webs: Student will learn the importance of a food web and illustrate the interdependence of plants and animals in an ecosystem.
6	Magnified items: Students will use a hand lens to see things that cannot be seen with the eye alone.
7	Mold Me Again and Again: Students will identify attributes and physical changes in matter.
8	Parts of a tree: Students will identify the functions of a root, stem, leaf, and trunk. Students will also take a walking tour of their school and find a tree, pointing out the roots (if visible), stem, leaves, and trunk.
9	Seed Sort: Students will identify that plants come from seeds. They will also follow the scientific method to sort beans by physical characteristics.
10	Digging in the dirt: Students will learn about the role of a geologist as a rock scientist. Students will dig through a box of sand and pull out rocks and shells. Then they will describe the physical properties of their rocks and shells.
11	Comparing Liquids: Students will identify the three states of matter and compare two liquids (glue and water) to try and figure out their identities based on their physical properties.
12	Aluminum Foil Figures: Students will identify items from their surrounding by matching patterns made out of aluminum foil mold to items found around the room.
13	Molecules Making Sounds: Students will discover that sound can be absorbed differently by different surfaces due to the arrangement of molecules.
14	Make It Soft: Students will identify changes in matter when pasta or rice softens when soaked in water.
15	Watch Muscles Work: Students will examine how muscles move by contracting.
16	Watch It Fall: Students will investigate the force of gravity to determine whether the mass of an object will affect how fast it will fall to the ground.
17	Liquid Magnifier: Students will observe how light bends when it passes through water the same way does through a magnifier.
18	How Many Seeds? Students will predict how many seeds will be in different types of fruits.

LESSON 1

GRADE LEVEL: K/1

ACTIVITY TITLE: Buoyancy

ACTIVITY OBJECTIVES: The student will make predictions and follow the scientific method for problem solving. Students will determine which kinds of items will sink and which ones will float (remain buoyant) in water.

MATERIALS: Plastic shoe box/ large bowl or container, water, items made of different materials (examples include: plastic spoon, straw, pennies, marbles, food lids, legos, buttons, pencil, etc.)

ACTIVITY STEPS:

1. Before making copies of the lab sheet, fill in the items that will be placed in the water in the data table.
2. Fill any large plastic container with water.
3. Go over the information in the box at the top of the page. Be sure that students understand that something that is buoyant will float in water.
4. Hold up each item and have students predict whether it will sink or float when placed in water.
5. Have students come up one at a time and place the item on the top of the water.
6. Record on the data table whether it sank or floated.
7. Guide students to list the items that sank and floated in the results section. If you have access to a blackboard, have students tell you the results and write them on the board for students to copy.
8. Guide students in coloring in the table

EXTENSION:

Brainstorm other items and have students tell whether they will sink or float based on what they are made of. Be sure students understand at the end of the activity that items like wood and plastic will float and items such as glass and metal will sink.

WRAP UP:

Encourage students to try this at home. Fill a container with water and find 10 items around the house. Have family members predict which ones will sink and which will float. Try it out to test your guesses.

BUOYANCY

Background Information: An item that is **buoyant** floats in water. Something that is not buoyant will sink. Items made out of certain materials will always be buoyant while others will always sink.

PROBLEM STATEMENT: Which items will be buoyant in water?

MATERIALS: Water, large plastic containers, plastic spoon, metal washer, block, pennies, legos, paper clips, Styrofoam, rubber ball marbles, straws.

HYPOTHESIS: What do you guess or predict will happen? Write sink or float for each item to show your guess.

- PROCEDURE:**
1. Fill in the chart with your guess before the experiment
 2. Take each item one at a time and place it on the top of the container of water.
 3. Record what actually happened on your chart.

Item	HYPOTHESIS (your guess) sink or float	RESULTS (What happened) sink or float	Did you guess correctly? Yes or No	What was the item made of: wood, plastic, metal, glass, styrofoam, rubber, or other
Metal washer				
Plastic spoon				
Paper clip				
Stryofoam				
Penny				
Block				
Lego				
Rubber ball				
Marble				
Straw				

RESULTS: Summarize what actually happened.

The items that floated were the :
The items that sank were the :

Count up how many items sank and how many floated. Graph it below.

Count how many of each kinds of item there were, complete the graph.

Buoyancy Graph

6					6			
5					5			
4					4			
3					3			
2					2			
1					1			
	SINK	FLOAT				Wood	Plastic	Me

Item Graph

6						
5						
4						
3						
2						
1						
	Wood	Plastic	Metal	Glass	Rubber	other

Conclusion: How many items supported your hypothesis?

[illegible]

LESSON 2

GRADE LEVEL: K/1

ACTIVITY TITLE: Our five senses

ACTIVITY OBJECTIVES: Student will identify their five senses and the sense organ used for each. Student will also tell about why each sense organ is important in their everyday lives.

MATERIALS: crayons, paper (optional items: mirror, glue, magazine pictures)

ACTIVITY STEPS:

1. Ask student if they have ever heard the word senses. Write the word on the board.
2. Jot down points they already know to guide you in your discussion. Let students know that our senses help us to live our lives each day from the time we wake up, to the time we go to sleep.
3. Draw the following chart on the board:

Sense	Sense Organ (do not fill these in right away, ask for students to tell you what sense organ is used)	How we use the sense (do not fill these in right away, ask for students for examples of each sense and how it is used.)
Sight	Eyes	Ask students what are some things they can see? We can see people, places, colors, shapes
Smell	Nose	Ask students what are some things they can smell? We can smell pizza, flowers, candles...
Touch	Skin	Ask students what are some things we can feel? We can cat fur, sandpaper, cold ice...
Taste	Tongue	Ask students what are some things we can taste. We can taste candy, chicken, sour things, sweet things, spicy things.
Hearing	Ears	Ask students what are some things we can see. We can see people, places, colors, shapes

4. Pass out paper and crayons. Instruct student to draw themselves. They should label each sense organ. If you have magazines, they can cut out the sense organ and glue it on their body. If you have a mirror, let students look in the mirror to help them to draw the sense organs. If not, they can look at their partner as a model.

EXTENSION:

Bring in several different items to smell. Have students close their eyes and smell each item as they try to guess what the items are. Use items with strong smells like pickle juice, coffee ground, perfume, etc. Also bring in a lemon or lemon juice so that they can taste something sour.

WRAP UP:

Tell students to go home and have their parents help them write down or draw all the things they tasted (ate) in one day.

LESSON 3

GRADE LEVEL: K/1

ACTIVITY TITLE: Sound

ACTIVITY OBJECTIVES: Students will use their sense of hearing to listen to different sounds and pitches. Students will identify the ear as the sense organ associated with sound. Students will also learn ways to protect their hearing.

MATERIALS: 4 or more drinking glasses, water, metal fork or spoon

ACTIVITY STEPS:

1. Ask students to tell you what the senses are. Remind them that they include hearing, seeing, touch, sight, smell, and taste.
2. Tell them that in this lesson, they will use their sense of hearing to hear different sounds.
3. Line up the empty drinking glasses and tap them each twice with the handle of the spoon. All the glasses should make the same sound.
4. Next, fill the first glass $\frac{1}{4}$ full of water and compare the sound it makes with the other glasses.
5. Fill the second glass $\frac{1}{2}$ full and tap the first, second, and third glass.
6. Continue by filling the next two glasses with $\frac{3}{4}$ and the last glass full of water. Have students take turns tapping the glasses and comparing the sounds.
7. See if students can brainstorm possible reasons why there are differences in sounds for each glass.
8. After students have given you their speculations, let them know that the reason for the different sounds is that there are different amounts of air in each glass.

EXTENSION: Bring in objects that make different sounds. Instruct students to close their eye and see how many they can identify them. You can also use empty film containers (Eckerd, Kmart, Wal Mart, & Target will give them to you for free if you tell them you are using them for a school) or plastic eggs and fill them with items that students can hear when you shake them. Fill each container with a different item like rice, marbles, broken toothpicks, and beans. Number the container and have students shake each one and try to guess what is inside.

WRAP UP: Tell students to go outside their house for 5 minutes and write down all the things they hear. Next they should go inside and sit in one room and list all the things they can hear.

LESSON 4

GRADE LEVEL: K/1

ACTIVITY TITLE: Animal Homes

ACTIVITY OBJECTIVES: Students will learn that animals are adapted to living in different types of environments. After listing different animal homes, students will take part in making a simulated spider web. :

MATERIALS: ball of string or yarn, bowl, wax paper, ½ cup of liquid starch (available in the grocery store in the laundry soap aisle)

ACTIVITY STEPS:

1. All living things are adapted or equipped to live in different environments. Some prefer to live in hot environments while others prefer cold ones. Some animals are adapted to live in the water and other to live on land.
2. Animals also are adapted to living in different homes. Draw the following table on the board and have students help fill in the animal homes. The answers have been provided for you. Do not list them on the board, rather engage students in coming up with the appropriate responses.

Ant	Ant hill
Bee	Hive
Wasp	Nest
Bird	Nest
Turtle	Shell
Spider	Web
Crab	Shell
Snail	Shell
Bear	Den
Gopher	Underground
Fish	Water

3. Explain that a spider is adapted to living in a web. The spider is adapted with spinnerettes that release strands that are woven together to make the web. Some of the strands are coated with sticky substances to trap the prey so that the spider can capture it.
4. In this activity, you will be making a spider web.
5. Pour 1 cup of liquid starch into a bowl.
6. Lay out a piece of wax paper and pass out a 7 inch piece of string to 4 students. Have students take turns dipping their entire piece of string in the liquid starch.
7. Lay down the first two pieces so that they make a plus sign on the wax paper as shown in box 1.
8. The next two students should lay down their strings as shown in box 2.
9. Next, soak the rest of the ball of string in the liquid starch.
10. With a continuous piece of string, have the children connect all of the 7 inch pieces in a spiral design as shown in box 3.
11. Allow the web to dry overnight. Remove them from the wax paper once they are completely dry and tape them to a window or dark surface.

EXTENSION:

Take a walking tour around the school and look for spider webs to get a closer look.

LESSON 5

GRADE LEVEL: K/1

ACTIVITY TITLE: Food Webs

ACTIVITY OBJECTIVES: Student will learn the importance of a food chain and illustrate the interdependence of plants and animals in an ecosystem.

MATERIALS: ball of yarn or string, name tags (you can also use masking tape or computer labels) food web chart, scissors, 12 index cards

ACTIVITY STEPS:

1. Before starting the activity, make name tags using the plants and animals of the food web chart. Write only one plant or animal name on each card. Attach string to each card so that it can be worn around the necks of the participants.
2. Have students form a circle.
3. Explain that plants and animals depend on each other for survival. Many plants and animals are connected to each other in what is called a food web. Food webs deal with the feeding habits of animals in a food chain.
4. Pass out the name tags so that only one tag goes to each student.
5. Explain that the game will begin with the student wearing the hawk nametag because the hawk is the highest animal on the food chain.
6. Hand the hawk the ball of yard and tell them to hold it.
7. Ask if anyone is wearing a tag with the name of an animal that a hawk might eat to raise their hand. (squirrel, rabbit, mouse, rat, bird)
8. When a student has one of the animals listed above, connect them with the hawk by rolling out the yarn and cutting it off so that the hawk is holding one end and the child with the animal is holding the other.
9. Connect each of the above animals with the hawk. The hawk should keep holding all the strings with the "animals" holding the other ends.
10. Next choose one of the hawk's prey. Ask if anyone is wearing a tag with the name of a food that animal might eat (nuts, vegetables, fruit, grass, grains, insects).
11. Continue connecting the students until they have all been strung together in a web of life.
12. Point out that each card in the game depends on each other. Ask what would happen if there was no rain for 6 months. How would that affect the food chain? (plants would die, insects and animals would have nothing to eat, and everything above them in the food chain would have nothing to eat)
13. Point out that even the smallest piece of grass is important to all animals in the food chain.

EXTENSION:

Discuss how we depend on the food chain as well. If there were no plants for the animals to eat, animals like cows would die out and we would have no milk to drink.

WRAP UP:

Ask students to go home and list or draw all the food that they eat that comes from a plant.

LESSON 6

GRADE LEVEL: K/1

ACTIVITY TITLE: Magnify It!

ACTIVITY OBJECTIVES: Students will identify that some things are too small to be seen with the eye alone. They will use a hand lens as a tool to take a closer look at things that are microscopic.

MATERIALS: hand lenses, items with small print like the newspaper, a penny, candy wrappers

ACTIVITY STEPS:

1. Ask students what sense organ is used to see. (the eye)
2. Tell them that although the eye is used to see, some things are too small to be seen with the eye alone.
3. We use a microscope or a hand lens (magnifying glass) to see things that are microscopic (cannot be seen with the eye alone). These items magnify items (make them bigger) and easier to see.
4. Demonstrate the proper way to use a hand lens. Hold the hand lens in one hand and close one eye. Put the hand lens in front of the open eye and hold the item you wish to see in the other. Bring up the item you wish to see to the hand lens. Move the hand lens back and forth until you can see the item well.
5. Pass out hand lenses and small print items to each student. Give them a chance to practice looking at each item. Students can also take a closer look at their hands with the hand lens.

EXTENSION: Bring in items with small particles like sugar, sand, salt, or coffee grounds. Have the students take a pinch and put it in their hands to take a closer look.

WRAP UP: Have students bring in leaves from home and use the hand lenses to take a closer look at the leaves.

LESSON 7

GRADE LEVEL: K/1

ACTIVITY TITLE: Mold Me Again And Again

ACTIVITY OBJECTIVES: Mold Me Again and Again: Students will identify attributes and physical changes in matter.

MATERIALS: Playdough or modeling Clay ball for each child

ACTIVITY STEPS:

1. Explain that everything is made up of matter. A pencil is matter, paper is matter, water is matter, air is also matter. There are 3 states of matter. They are solid, liquid, and gas. Some examples are; ice is a solid, water is a liquid, and air is a gas.
2. Matter can change states. Ice is a solid, but when it melts, it changes from a solid to a liquid.
3. Explain that physical properties of matter describe how the matter looks or feels. Some examples include the size, color, or shape. No matter how you change the physical properties, the matter stays the same.

Examples:

1. If you have a red balloon and blow it up, the shape has changed, but it is still a red balloon.
2. If you take a ball of clay and flatten it, it is still clay, you have only changed the shape.
3. If you take a loaf of bread and slice it, it is still bread.
4. Pass out a piece of clay to each student. Have them describe its attributes (color, size, shape, texture)
5. Direct students to roll their clay in a ball. Ask them if it is still clay.
6. Direct students to flatten it. Discuss that the clay has changed physical characteristics, but it is still clay. Continue by making a snake and other shapes.
7. Be sure the students understand that just because the appearance changes, the matter remains the same. .

EXTENSION: Give each student a piece of paper. Have them fold it, ball it up, and rip it. Ask them if the matter has changed in any way but physically (it has not unless you burn it and it turns to ash).

WRAP UP: Have students find something at home to change physically. Ask them to come in and share their findings with groups.

LESSON 8

GRADE LEVEL: K/1

ACTIVITY TITLE: Parts of a tree

ACTIVITY OBJECTIVES: Students will identify the functions of a root, stem, leaf, and trunk. Students will also take a walking tour of their school and find a tree, pointing out the roots (if visible), leaves, and trunk.

MATERIALS: None

ACTIVITY STEPS:

1. Go over the information on the handout. Draw a tree on the board starting from the ground up.
2. First draw the roots. Explain that the roots hold the plant in the ground. They also send minerals and water throughout the plant.
3. Draw the trunk. Explain that the trunk holds up the tree. Draw the trunk coming off the roots.
4. Next draw branches on the trunk. Explain that the branches hold up the leaves and carry nutrients to the leaves.
5. Finally, draw leaves on the stems. Explain that the leaves use water, minerals, and light from the sun to make food for the plant.
6. Take a walk with students around the school. Have students point out trees. On each tree, choose students to identify the roots (you may not see them if they are underground), branches, leaves, and trunk.

EXTENSION: Pass out paper and have students draw a tree. Write the words roots, stems, leaves, and trunk. Instruct students to label each of the parts on their drawings. Discuss why trees are important and what we get from trees (oxygen, paper, wood, food).

WRAP UP: Ask students to count how many trees they can count from their home to school.

LESSON 9

GRADE LEVEL:

ACTIVITY TITLE: Seed Sort

ACTIVITY OBJECTIVES: Students will identify that plants come from seeds. They will also follow the scientific method to sort beans by physical characteristics.

MATERIALS: one bag of mixed beans, small Dixie cups, glue

ACTIVITY STEPS:

1. Go over the information on the top of the activity sheet. Be sure students understand that plants start from tiny seeds.
2. Pass out a small cup of beans to each pair of students.
3. Explain that physical characteristics are ways to describe how something looks. Have students look into their cups and ask them how they might describe the beans in the cup. Acceptable responses include size, shape, or color.
4. Tell students to pour out their beans and put them in piles with ones that look the same.
5. After the beans are sorted, have student glue one type of bean in each box. Then instruct them to count how many were left and record that number under the glued bean.

EXTENSION:

Soak lima beans overnight. Give each student a lima bean, a Dixie cup, and some soil. Instruct students to fill their cup with soil, poke a hole in the soil and drop in the seed. Cover over the seed with soil and lightly water. Send the cups home and tell students to keep them moist and put them in a place where they will get some sun (inside a window)

WRAP UP:

Students who have colored cereal like fruit loops can take a small cup and sort by color.

Name_____ Date_____

Seed Sort

Seeds come in different sizes and shapes, most are surrounded by fruit. Different types of fruit have different types of seeds. Most plants grow from seeds. Seeds are planted in the ground and as long as the seed has water and sunlight, it will grow into a new plant.

Problem Statement: How many of each kind of seed or bean are in the cup?

Materials: Cups with seeds or beans

Data Table: Glue one of each kind of seeds in the boxes in the first column. Pour out the seeds and sort them into piles of seeds that look the same. Count how many there are of each and write the number next to the glued seed.

Glue your seed here:	How many were there?

Count how many seeds you have in all. Write how many you have in the box below.

--

Draw pictures of your favorite fruits. Draw the seeds inside them.

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LESSON 10

GRADE LEVEL: K/1

ACTIVITY TITLE: Digging In The Dirt

ACTIVITY OBJECTIVES: Students will learn about the role of a geologist as a rock scientist. Students will dig through a box of sand and pull out rocks and shells. Then they will describe the physical properties of their rocks and shells.

MATERIALS:

Shoebox (paper or plastic) filled with sand, rocks and shells, hand lenses

ACTIVITY STEPS:

1. Go over the background information at the top of the page.
2. After students understand about the role of a geologist, tell them that they are going to practice being a "rock scientist".
3. Have students dig through the box(es) of sand and instruct them to pick out all the rocks and shells that they find. Discuss that physical properties describe how something is described, how it looks or feels.
4. Take out a shell or rock and describe its properties to the students.
5. Instruct students to choose one rock and one shell. Have them draw it and find words to describe it. Have students fill in the attached handout, or complete orally with the whole group.

EXTENSION:

Take a walking tour of the school and look for rocks. Use a hand lens to take a closer look.

Find a balance scale and demonstrate to students how to weigh them on the scale. Use the extension sheet as a guide or draw it on the board.

WRAP UP:

Tell students the next time they go to the beach to look for interesting shells or rocks. Encourage students to bring them to share with the group.

EXTENSION ACTIVITY

PROBLEM STATEMENT: How much will the rocks and shells weigh together?
(How many cubes will it take to balance the scale?)

HYPOTHESIS: What is your prediction?

Weigh the shells by themselves. How many cubes did they weigh?

Weigh the rocks by themselves. How many cubes did they weigh?

How much did the rocks and shells weigh in all? _____

How much more did the rocks weigh than the shells? _____

Graph your results:

# o f c u b e s	20			
	19			
	18			
	17			
	16			
	15			
	14			
	13			
	12			
	11			
	10			
	9			
	8			
	7			
	6			
	5			
	4			
	3			
	2			
	1			
		Rocks	Shells	Rocks and shells together

Item Being Weighted

Write About it: On a separate piece of paper, respond to the following prompt.

As an archeologist, you are on a very important dig to find ancient artifacts. You found a dinosaur skull. Tell about what it might have been like to live in the days of the dinosaurs.

LESSON 11

GRADE LEVEL: K/1

ACTIVITY TITLE: Comparing Liquids

ACTIVITY OBJECTIVES: Students will identify the three states of matter and compare two liquids (glue and water) to try and figure out their identities based on their physical properties.

MATERIALS:

Paper plate or wax paper, two spoons per group, small portion cups with glue in one and water in the other.

ACTIVITY STEPS:

1. Go over the information in the box on the top of the handout.
2. Discuss the difference between solids, liquids, and gases.
3. Tell students that physical properties of matter describe how it looks, feels, and acts.
4. Pass out a paper plate or wax paper to each group along with a portion cup filled with water and one with glue. Pass out two spoons.
5. Help students list (on the board or on paper) ways to describe how the two liquids compare.
6. Put some of each on a spoon and describe how they pour.
7. Finally, let student feel each and describe how they feel.
8. Using all of the observations, have students speculate as to the identities of each.

EXTENSION:

Do this same activity on another day using other liquids such as syrup, milk, juice, or pancake batter.

WRAP UP:

Have students work at home with their parents to answer the following:
Think about your favorite liquid. Explain why it is your favorite.

Name_____ Date_____

Comparing Liquids

There are 3 states of matter. They are solid, liquid, and gas. You can see solids, they have a specific shape. Ice is a solid. You can also see liquids, but they do not have a specific shape. Melted ice or water is a liquid. Liquids take on the shape of the container they are in. You cannot see gases, they are invisible and they fill up the shape of the container they are in. When water is boiled, the gas that is released is water vapor. A physical property tells us what the matter it looks like, feels like, smells like and other characteristics that describe it. In this experiment, you will compare the physical properties of two liquids.

Problem Statement: What is the identity of the two mystery liquids?

Hypothesis: After listing the physical properties, predict what is the identity of each liquid.

Procedure:

Look at each liquid and fill in to table for each liquid. Write words to describe how each one looks.

Liquid #1	Liquid #2

Use a spoon to take a small amount of each liquid. Pour it on the table and tell what you observed about each.

Liquid #1	Liquid #2

Touch each liquid, tell what you felt for each.

Liquid #1	Liquid #2

Hypothesis:

I predict that liquid #1 was_____.

I predict that liquid #2 was_____.

LESSON 12

GRADE LEVEL: K/1

ACTIVITY TITLE: Aluminum Foil Figures

ACTIVITY OBJECTIVES: Students will recognize patterns and shapes to identify items found in their surroundings.

MATERIALS: Aluminum foil

ACTIVITY STEPS:

1. We recognize items by their patterns and shapes. We store certain patterns and shapes in our memory and can recall them when we see them.
2. Give each child a piece of aluminum foil the size of a half sheet of paper.
3. Show students how to make a mold by placing a piece of foil on your hand and pressing it around the fingers to mold the shape of your hand.
4. Whisper in each child's ear what item they will make a mold of. (doorknob, lightswitch, pencil, crayon box, computer mouse, other objects around the room).
5. Give each child time to make their mold. Then, show the mold to the group and see who can guess what each mold was made with.

EXTENSION:

Make each child a mold of their hand. Staple it to a piece of posterboard and send it home to share with his/her family.

WRAP UP:

Have students make mold of items around the house with their parents help.

LESSON 13

GRADE LEVEL: K/1

ACTIVITY TITLE: Molecules Making Sound

ACTIVITY OBJECTIVES: Students will identify that sound can be absorbed differently by different surfaces due to the arrangement of molecules.

MATERIALS: Deep and wide pots, metal pans, plates, cookie sheets

ACTIVITY STEPS:

1. Objects produce different echoes because of the materials they are made from. When sound hits them, some materials are more absorbent and some are more reflective. The arrangement of the molecules within the materials determines whether the sound is absorbed or reflected.
2. If molecules' bonds are strong, the sound is reflected. If they are weak, they are absorbed. If the sound echoes loudly and you can hear it well, it is reflected. If the sound echoes softly or not at all, it is absorbed.
3. Have student close their eyes, take a deep breath, and hum loudly as you hold one of the items about 12 inches from their face.
4. Ask them to describe what they hear. You may need to move the item closer.
5. Have them tell whether it is a vibration or an echo.
6. Continue with all the items and determine which will create a louder sound.

EXTENSION:

Fill glasses with different amounts of water. Strike with a spoon and listen to the different sounds that are produced.

WRAP UP:

Have students turn pots and pans of various sizes over on the carpet and the counter. Hit them with metal and wooden spoons to hear the different sounds that are produced. Note the differences in sound from the carpet to the counter or tile floor.

LESSON 14

GRADE LEVEL: K/1

ACTIVITY TITLE: Make It Soft

ACTIVITY OBJECTIVES: Students will identify changes in matter when pasta or rice softens when soaked in water

MATERIALS: 2 bowls, 2 cups cold water, 2 cups hot water, 2 spoonfuls of uncooked rice

ACTIVITY STEPS:

1. Explain that most food will absorb water, which causes it to become soft. Both pasta and rice are hard before they are placed in water. The temperature of the water will affect how quickly rice softens.
2. Warm water causes the molecules to move quickly and loosen faster than cold water.
3. Have students predict whether warm or cold water will soften the rice or pasta faster.
4. Place the rice in a bowl. Have students feel it to see that it is hard.
5. Pour half of the rice in another bowl. Pour 2 cups of hot water in one bowl and two cups of cold water in another. Wait for two minutes and scoop out some rice from each bowl. Have students feel the difference. They will find that the one in the hot water was softer.

EXTENSION:

Try the same activity with pasta.

WRAP UP:

Share the findings with your parents. Next time your family cooks rice or pasta, ask your parents to let you measure the water and the rice or pasta and put it into the pot. Measure how long it takes for the water to boil.

LESSON 15

GRADE LEVEL: K/1

ACTIVITY TITLE: Watch Muscles Work

ACTIVITY OBJECTIVES: Students will examine how muscles move by contracting.

MATERIALS: Mirror (optional)

ACTIVITY STEPS:

1. Explain to students that bones and muscles help us to move. You can see muscles contracting and moving by making different facial expressions.
2. Simple muscle contractions make movement that you can see. If you do not have a mirror, students can sit facing each other and watch each other make muscle contractions.
3. Begin by having students look at each other or in a mirror while making no facial expressions. Have them feel their face to see how the muscles feel when they are relaxed.
4. Next have them smile and frown and watch as the facial muscles move up and down changing what the faces looks like. Have them feel their face and feel the difference.

EXTENSION:

Have students flex other muscles like the biceps or calves and feel the muscles move as they flex.

WRAP UP:

Talk about the importance of drinking milk at home to help maintain strong bones.

LESSON 16

GRADE LEVEL: K/1

ACTIVITY TITLE: Watch It Fall

ACTIVITY OBJECTIVES: Students will investigate the force of gravity to determine whether the mass of an object will affect how fast it will fall to the ground.

MATERIALS: chair or balcony, objects of varying weights

ACTIVITY STEPS:

1. Ask students the following question: If you drop two items, one heavy and one light, which one will hit the ground first?
2. Explain that gravity is the force that causes an object to fall to the earth.
3. The force of gravity pulls down equally on all objects, regardless of how much they weigh.
4. Gather items of different weights (penny, marble, ball of aluminum foil, different balls).
5. Give each child in the group an item. Each child should stand on a chair or on the second floor of a building. They should hold the items at the same height.
6. On the count of 3, all items get dropped.
7. They will find that all items will fall at the same rate.

EXTENSION:

Ask students if they dropped a hammer and a feather at same time, which would reach the ground first? If you try this, be sure to do it inside where there is no moving air. The air will cause a change in the experiment.

WRAP UP:

Try this at home with other objects.

LESSON 17

GRADE LEVEL: K/1

ACTIVITY TITLE: Liquid Magnifier

ACTIVITY OBJECTIVES: Students will observe how light bends when it passes through water the same way does through a magnifier.

MATERIALS: zip lock bag, water, penny (optional)

ACTIVITY STEPS:

1. Explain to students that a magnifying glass is used to magnify or make things look bigger.
2. When light passes through a magnifying glass, the light bends and spreads out causing the image to look bigger.
3. Although we cannot see light bending, we can see the result in the magnified image.
4. Fill a zip lock bag with water and place the bag on top a sheet of paper with words on it.
5. Experiment by taking some water out of the bag. The more water in the bag, the more the image will be magnified. The less water in the bag, the less the image will be magnified.

EXTENSION:

Use the water bag magnifier to look at a penny. On the back of the penny, see if you can see Lincoln sitting inside the Lincoln Memorial.

WRAP UP:

Show your parents how to make a water magnifier and find Lincoln sitting in the Memorial.

LESSON 18

GRADE LEVEL: K/1

ACTIVITY TITLE: How Many Seeds?

ACTIVITY OBJECTIVES:

Students will predict how many seeds will be in different types of fruits.

MATERIALS: knife, various fruits, crayons

ACTIVITY STEPS:

1. Prediction is the core of all scientific exploration. We make predictions based on experiences and knowledge. Students use observation skills to test their predictions. In this activity, students will predict how many seeds will be in different types of fruits.
2. Lay out various fruits on the table and list them on the board. Have students fill in the chart on the next page with their prediction of how many seeds will be in each fruit.
3. Cut open each fruit and count the seeds.
4. Record the number on the board and have students copy onto their charts.
5. Be sure they know that it is alright to have a prediction (guess) that is not the same as the results. Encourage students to NOT change their guesses. Let them know that we learn from our predictions. Have students draw the fruits on their handout.

EXTENSION:

Plant some of the seeds in soil and see if anything sprouts.

WRAP UP:

Tell students to predict how many seeds they will find in a cucumber or tomato slice. If they have cucumbers, peppers, or tomatoes at home, they can try it.

Seeds

Write the name of each fruit on the line. Predict how many seeds will be in each fruit and write it in the prediction box. Count the seeds in each fruit and see if you predictions were correct. Finally, draw a picture of each fruit.

Fruit Name				
How many seeds do you predict will be in the fruit?				
Count the seeds. Record how many you found in each fruit.				
Draw the fruit.				