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Matter Matters

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UNDERSTANDING BY DESIGN

Unit Cover Page

Unit Title: Matter Matters

Grade Level: 2nd grade

Subject/Topic Area(s): Science

Designed By: Natalie Pierce, Jamie Boelens, and Catherine Brackett

Time Frame: 15 days

School District: Alamo Heights ISD

School: Woodridge Elementary

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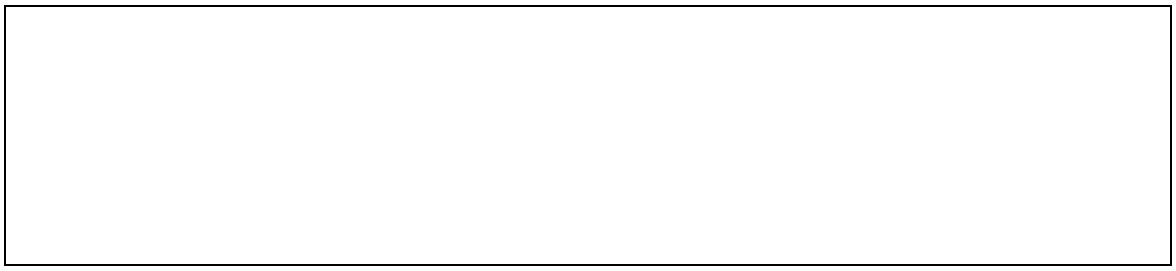
Brief Summary of Unit (Including curricular context and unit goals):

Students will understand that:

1. All matter can be classified by its observable, physical properties.
2. Matter can be measured and changed by energy (ex: heat, light, sound).
3. When materials are put together, they can do things that they cannot do by themselves.

Students will know:

1. The difference among a solid, liquid, and a gas
2. The concepts of heating, cooling, cutting, melting, folding, and sanding.
3. Energy is power- the ability to do work or make changes.



Matter and Energy

Stage 1 – Desired Results

2.1 A: (1) Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following home and school safety procedures. The student is expected to: (A) identify and demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including wearing safety goggles, washing hands, and using materials appropriately;

2.2 A, C, D, E, F: (2) Scientific investigation and reasoning. The student develops abilities necessary to do scientific inquiry in classroom and outdoor investigations. The student is expected to: (A) ask questions about organisms, objects, and events during observations and investigations; (C) collect data from observations using simple equipment such as hand lenses, primary balances, thermometers, and non-standard measurement tools; (D) record and organize data using pictures, numbers, and words; (E) communicate observations and justify explanations using student-generated data from simple descriptive investigations; and (F) compare results of investigations with what students and scientists know about the world.

2.4 A, B: (4) Scientific investigation and reasoning. The student uses age-appropriate tools and models to investigate the natural world. The student is expected to: (A) collect, record, and compare information using tools, including computers, hand lenses, rulers, primary balances, plastic beakers, magnets, collecting nets, notebooks, and safety goggles; timing devices, including clocks and stopwatches; weather instruments such as thermometers, wind vanes, and rain gauges; and materials to support observations of habitats of organisms such as terrariums and aquariums; and (B) measure and compare organisms and objects using non-standard units that approximate metric units.

2.5 A-D: (5) Matter and energy. The student knows that matter has physical properties and those properties determine how it is described, classified, changed, and used. The student is expected to: (A) classify matter by physical properties, including shape, relative mass, relative temperature, texture, flexibility, and whether material is a solid or liquid; (B) compare changes in materials caused by heating and cooling; (C) demonstrate that things can be done to materials to change their physical properties such as cutting, folding, sanding, and melting; and (D) combine materials that when put together can do things that they cannot do by themselves such as building a tower or a bridge and justify the selection of those materials based on their physical properties.

Transfer

Students will independently use their learning to…

Identify states of matter, physical properties, changes in matter, uses for matter, and how matter works together in a system.

Meaning

Understandings

Students will understand that….

1. All matter can be classified by its observable, physical properties.
2. Matter can be measured and changed by energy (ex. heat, light, sound).
3. When materials are put together, they can do things that they cannot do by themselves.

Essential Questions

Students will keep considering….

1. Why does classifying matter help us learn about the world around us?
2. How do changes in matter affect our everyday life?
3. Why is energy important?
4. How do materials work together?

Acquisition

Knowledge

Students will know…

1. The difference between a solid, liquid, and gas.
2. The concepts of heating, cooling, melting, cutting, folding, and sanding.
3. Energy is power—the ability to do work or make changes.

Skills

Students will be able to…

1. Classify matter into solid, liquid, and gas using physical properties such as shape, mass, temperature, texture, and flexibility.
2. Identify changes in matter.
3. Exercise safety precautions when handling materials.

Stage 2 – Evidence		
Evaluative Criteria (for rubric)	**CODE** (M or T)	
• Presentation and Work Ethic • Identify states of matter • Identify changes in matter • Identify parts of activity • Understood systems	M, T	Performance Task(s) *Students will demonstrate meaning-making and transfer by…* **1. Matter Matters (Assessment and Rubric Attached):** Tell students they have been hired by an education agency to explain to other second graders how matter is all around them. (Create a poster, booklet, children's book, movie, song). ▪ Identify an everyday activity (cooking spaghetti, playing soccer, cleaning, building a house, crafts). ▪ Identify a minimum five parts of that activity and label the corresponding states of matter. (Cooking: spaghetti-solid, water-liquid; Building: wood-solid, sweat-liquid) ▪ Identify five changes in matter. (Cooking: spaghetti-texture change—rigid to flexible, water-evaporation—liquid to gas; Building: wood-hole in wood with nail, sweat-evaporation) ▪ Take one of the parts away. Can this activity still take place? Can this system still function? Why or why not? (Cooking: Water-No, because the spaghetti needs water to be edible; Building: Wood-Yes, because the builder could use bricks instead or No, because the house needs wood to hold its shape.) ▪ If needed, see teacher for writing prompt on TAKS Scopes. (blowing soap bubbles, crushing cans).
• Presentation and Work Ethic • Describing your object • Changing your object • Usefulness of new object	M, T	**2. Matter Invention (Assessment and Rubric Attached):** You've been hired to create a commercial where you take something old and turn it into something new to advocate recycling. Explain to the camera what's the change that you made, how did you change the function, how is the new thing useful. ▪ Choose a normal, everyday object (juice box). ▪ Describe its properties and how it is used. Make a diagram. Label its parts and states of matter. ▪ Change it in some way (cut juice box top off), so that it serves a different, useful purpose (juice box becomes a planter, shovel). *Clarification: Stacking markers on top of each other to make a sword would be a non-example because it is a pretend object, not an actual sword. However, if you stacked markers on top of each other to make a pointer, that would serve an actual, useful purpose.* ▪ Describe how you changed it. What is its new function? What did you add or take away to allow it to function in a new, useful way?

		---------- **Other Evidence (e.g., formative)** Matter Check-In (Pre, Mid, Post Assessment) Exit Card GoGurt Experiment Measuring Mass Worksheet Classifying Matter Stations Matter Vocabulary Matching

Stage 3 – Learning Plan

CODE (A, M, T)	Pre-Assessment *How will you check students' prior knowledge, skill levels, and potential misconceptions?*	
	Please give pre-assessment a week before you begin unit to familiarize yourself with student ability. Ask essential questions (see attached): 1. Why does classifying matter help us learn about the world around us? 2. How do changes in matter affect our everyday life? 3. Why is energy important? 4. How do materials work together?	
	Learning Activities	Progress Monitoring (e.g., formative data)
	Day 1: Classifying Matter	
A, M	*Sorting Shoes* This activity will give students practice with sorting and classifying objects by physical properties. Emphasize that sorting will help us find similarities and differences between objects to better help us understand our world. Have students put all their shoes in the middle of the floor and discuss as a group different ways to sort their shoes. Possibilities include sorting by shape, size, texture, bottom of shoe, color, laces, flexibility, and type. Be sure to practice the sort as well.	
M	*Debrief and Discussion* Sorting is necessary because we need to have organization. Briefly discuss why people need to sort. Ask how they would sort their shoes in their own closet. What about when you go to the grocery store? How do you find bread, dessert, milk, vegetables? Do you think scientists do the same thing? Do they sort too? What do you think they sort? Over the next few weeks, we are going to learn how scientists organize stuff. This will help us make sense of our everyday lives better.	

A, M	*Matter Card Sort* Divide students into groups of two or three. Give each group a set of Matter Sorting Cards (find various pictures to sort). Have students work together in groups to come up with as many ways to sort the cards as possible. When they have a sort completed, they will raise their hands and explain it to you. Give a unifix cube to the group for each completed sort. After 5-10 minutes, collect everyone's unifix cubes, gather the group on the carpet, and count/discuss how many ways the entire class sorted matter.	
M	*Exit Card* Ask the class: Why do you think we did this today? Generate answers. Have them go to their desks and write their answer to this question on a 3x5" notecard to turn-in for teacher.	Exit Card
	Day 2: Three States of Matter Introduction	
A	*Chalktalk: Vocabulary Introduction* Divide the whiteboard into three sections and head the three columns with the words Solid, Liquid, and Gas. Allow students to have five minutes to SILENTLY write/draw on the whiteboard their associations with these three words. Tell students that Solids, Liquids, and Gases are called MATTER. Matter is all around us.	
A	*What Makes Matter Matter* Briefly introduce the concept of atoms vs. molecules. Hold up one unifix cube-this symbolizes an atom. Stack another one or two unifix cubes on top-this symbolizes a molecule. How molecules are arranged determines if they are solids, liquids, or gases.	
A,M	*Solids, Liquids, and Gases Hand Motions* Have students hold their hands up in fists. Explain that they will pretend their fists are molecules, tiny particles that make up matter. However far apart or close together their molecules are will determine if the matter is a solid, a liquid, or a gas. Solids: Have students hold fists closely and tightly together. Explain that solids maintain their shape and that the molecules are packed closely together. Hold up a few types of solids (wood block, fabric, wire, playdough). Unless you change the solid (fold fabric, break apart the playdough), the solid will keep its shape.	

	Liquids: Have students turn fisted hands slowly one over the other. Explain that liquids take the shape of their container and that the molecules move slowly around one another. Have a clear vase filled with water (and a different shaped clear container on hand). Put in a few drops of food coloring. Have students observe how the food coloring is spreading throughout the liquid because the molecules are slowly moving the food coloring around. Ask students what shape the liquid is in the vase. Then, pour the liquid into the second clear container. Emphasize that liquids take the shape of their container and now the shape of the liquid has changed. On a flat, waterproof surface (such as a mini-whiteboard or on a desk), pour some of the water out of the container and have students observe how the water spreads across the flat area because there is no container to hold it. Gas: Have students wildly shake fisted hands far apart from each other. Explain that gases fill every part of their container, the fill every nook and cranny, and the molecules are very energetic. Have students stand on one side of the classroom and you stand on the opposite side. Spray an air freshener into the air. Have students raise their hands when they begin to smell the scent. Emphasize that the gas molecules are filling their container (the room).	
A, M	*Solids, Liquids, and Gases Dance* Choose three people who are "good dancers" to stand at the front of the room to do the solids, liquids, and gases dance. You give them directions for which dance to do. Solids Dance: Stand still, like a statue, close together. Liquids Dance: Stand farther apart and move slowly and lethargically. Gases Dance: Move quickly and sporadically. Dancing with their coolest dance moves.	
A	*Solids, Liquids, and Gases "Simon Says"* Play "Simon Says": "Be a solid," etc. Solids Dance: Still fisted hands or standing like a statue Liquids Dance: Turn fisted hands slowly one over the other or do a very slow, swaying dance Gases Dance: Shake hands in fist fast or run in place	
	Day 3: Properties of Solids	
A	*Review*	

	Have students review hand motions for solids, liquids, and gases. *Solids*: Fists tightly together; solids hold a definite shape *Liquids*: Fists move slowly around one another; liquids take the shape of their container *Gases*: Fists moving sporadically, far apart; gases fill every nook and cranny	
M	*FOSS KIT Investigation 1: Part I—Introduce Solids* Familiarize students with physical characteristics vocabulary on *Properties of Solids* worksheet. Give groups of 2 students solids materials. Students will sort, manipulate, observe properties of solids. Students will fill out *Properties of Solids* worksheet with their partner. If time, have students play "Guess My Sort" with solids	Properties of Solids Worksheet
	Day 4	
A	*Review* Have students review hand motions for solids, liquids, and gases. *Solids*: Fists tightly together; solids hold a definite shape *Liquids*: Fists move slowly around one another; liquids take the shape of their container *Gases*: Fists moving sporadically, far apart; gases fill every nook and cranny	
M	*FOSS KIT Investigation 2: Part II—Properties of Liquids* Students will observe liquids in bottles. Introduce students to liquid properties vocabulary cards. Have students complete in pairs *Properties of Liquids* worksheet.	Properties of Liquids Worksheet
	Day 5: Introducing Mass	
	Common Misconceptions about Mass *Kids often think that mass is the same as weight or means how big or small something is. However, mass never changes, unlike weight, unless matter is added or removed. Mass is how much matter makes up an object. Try not use the word "weight."*	
A, M	*Cereal Box Experiment to Demonstrate Mass* Gather students on the carpet. Have two cereal boxes standing on the carpet. One is full of cereal and the other is empty (do not tell the students this). Make a ramp right next to the two cereal boxes using a book and blocks. Ask students what they predict will happen when you roll a ball down the ramp to hit the cereal boxes (emphasize that they are the same size and	

	shape). Roll the ball down the ramp to hit the empty box and full box. Discuss why the empty box moved more than the full box moved. Explain that the full cereal box had more mass because there was more matter in the full box. Mass is how much matter is in an object.	
A	*Measuring Mass Demonstration* Demonstrate how to measure mass using a balance scale. Find the equilibrium point, place an object on one side, and slowly drop in a nonstandard unit on the other side (pattern blocks, unifix cubes, etc.). When the two sides are equal, emphasize that both sides now have equal mass. Write the mass of the object on the board including the non-standard units (ex. 56 unifix cubes or 27 triangles)	
A, M	*Measuring Mass Practice* Explain *Measuring Mass* worksheet. Divide students into groups of four. Set up four-six stations around the room (depending on the number of students) where students will measure the mass of an object with a non-standards unit of measurement (one station would have unifix cubes for measuring, while another might have square tiles). Rotate students between these stations as they practice measuring the mass of different objects. Students will write the object, non-standard unit of measurement, and the mass of their object on their worksheet.	Measuring Mass Worksheet
	Day 6: Classifying Matter By Physical Properties	
M	Students will be divided into four or five groups and rotate through the Classifying Matter Stations and complete worksheet (see attached). They should spend approximately 7 minutes per station with 1 minute transition time. There are four stations with a fifth one added either for a supplemental activity or in the event that Brainpop, Jr. is unavailable.	
	List and Description of Stations: *Measuring Mass Station*: Teacher sets out several objects and balance scales. Students will practice measuring the mass of three of these objects and recording their answers. Teacher may determine beforehand what non-standard unit of measurement students will use. It is suggested that the teacher finds out the mass answers of the given objects beforehand to be able to quickly check student accuracy.	Classifying Matter Workstations Sheet

	Sorting By Shape, Texture, Flexibility: Teacher will place several solid objects for students to sort according to shape, texture, flexibility, and any other categories dealing with physical characteristics. It is suggested that the teacher write out the words "Shape," "Texture," and "Flexibility" on note cards to remind students to sort by these categories. On their worksheet, they will choose one of the ways they sorted the objects, circle that word on the top of their station box, and then draw and label their sort. *Sorting By Temperature:* Teacher will place three containers filled with water on the table: one filled with ice water, one room temperature, and one with hot water. Have students use thermometers to measure the temperature of the different containers and record the temperature on their worksheet. If time allows, have students sort do a picture sort of things that are hot, room temperature, and cold (several options are available on the internet). *Brainpop, Jr. "Solids, Liquids, Gases"* Video (4:13): Students will gather around the computer and watch the Brainpop, Jr. movie. Then, they will choose to take either the easy or hard quiz, circle that choice on their worksheet, and write their answers to the questions. *Matter Vocabulary Matching:* Teacher will need to cut the vocabulary words and their definitions apart (see attached). Students will try to match the vocabulary word with its definition.	
M	*Reflection Discussion* Gather students on the carpet and reflect on the purpose of these stations. Ask about any insights or discoveries they had. Reflect on why the hot water at the temperature station is not as hot as it was in the beginning.	
	Day 7: GoGurt Experiment *GoGurt Experiment Overview* "GoGurt" Experiment (adapted from TAKScopes) In this experiment, students will be exploring the differences between solids and liquids. They will use what they have learned about physical properties to describe the differences and gain a better understanding of solids and liquids. *Preparation and Materials Needed* -24 hours before experiment, freeze a package of Gogurt for class use. The Gogurt needs to be completely frozen	GoGurt Worksheet

	for lesson. -Gogurt (one for each group) -Frozen Gogurt (one for each group) -Clear cups (two per group) -Thermometer (one per group) -Balance (one per group) -Spoons (two for each student)	
M	*Experiment Steps (see attached worksheet)* 1) The teacher will give each group the unfrozen GoGurt. Groups will squeeze GoGurt into one clear cup and observe its physical properties. The students will describe the size, shape, mass, temperature, flexibility and texture of the GoGurt on the worksheet provided. Then they will use the spoon to taste the GoGurt (only once) and describe its taste. Some questions to consider: -Did the GoGurt take the shape of the clear container it was poured into? -Is this GoGurt a solid or a liquid? Justify your answer. 2) The teacher will give each group the frozen GoGurt. Groups will squeeze GoGurt into the other clear cup and observe its physical properties. The students will describe the size, shape, mass, temperature, flexibility and texture of GoGurt on the worksheet provided. Then, they will use their other spoon to taste the GoGurt (only once) and describe its taste. Some questions to consider: -Was the taste different from the unfrozen GoGurt? -Did the frozen GoGurt take the shape of the clear container it was poured into? -Is the frozen GoGurt a solid or a liquid? Justify your answer. *Special Note Energy is a very important concept in this unit because it is energy in which creates the changes in matter. During this experiment, the frozen Gogurt will eventually begin melting, therefore changing back into a liquid. This would be a great time to bring it to the students' attention that energy (heat energy) is causing the melting to happen. You can	

	also add that energy is power-the ability to make things change.This will help prepare the students for Day 8-Crayon Experiment.	
A, M	**Day 8: Energy Socratic Discussion and Crayon Experiment** *Socratic Discussion* Gather the students on the carpet in a circle. Explain that we are going to have a Socratic Dialogue today. This means the teacher will pose a question and listen as the students tell each other what they think the answer could be. Some questions are very hard and do not have a right answer. This is similar to having a conversation around a dinner table. Everyone is entitled to their ideas and respect is shown to each person. Give the ground rules for a Socratic Dialogue: 1) Only 1 person at a time can speak 2) All answers and ideas are good 3) We share the talking time (no one can talk too much or too little) Start with a simple question until the students are comfortable with the process. The conversation will take a path of its own so feel free to travel with the class by coming up with different questions. Sample Questions: • What does it mean when a teacher says, "There is too much energy in here?" • Why do your parents not give you sugar (cookies/coke) late at night? Where did that energy come from? • What is energy? • Do we need energy? Why? • Where does energy come from? • What does not have energy? • Do you need to be alive to have energy?	
M	*Mid Point Check In* Pass out the Matter Check In Page. The students have already seen this page once. This will help the teacher understand what they still need to learn.	Matter Check-In
A,M	*Crayon Experiment (Heat=Solid to Liquid)* **Preparation and Materials Needed** • 1 pie tin • 1 hot plate • 1 Popsicle stick	

	• 10 yellow crayons • 10 blue crayons **Procedure** Remind the class how scientist use physical properties. Using their Science Journals, if applicable, have the students draw and label their crayon. They also need to list the physical properties. Then, show the students how to take off the paper wrapper around the crayon. Have an assistant pick up all the crayons and to place them in the pie tin. Once they are gathered in the tin, ask the students to draw what they see again. Help them to notice that the crayons are mixed but can still be taken apart. Each crayon is still the same color/shape. What do they think will happen when you add heat (a type of energy) to the pie tin? Turn on the hot plate. Carefully stir the mixture, with the Popsicle stick, as it melts. What do they see? Once the crayons have melted and turned green, have the students draw what they see and notice that the physical properties have changed. Allow the pie tin to cool over night. **Day 9: Complete Crayon Experiment**	
M	*Crayon Experiment Review and Venn Diagram* Begin by having the class review the experiment from the day before. Once again look at the pie tin and make observations. Using a Venn Diagram, compare and contrast the physical properties of the premelted crayons, melted, and cooled crayons. What made them change? What made the physical properties change? Make sure they understand some physical properties are changed through heat and loss of heat.	
M	*Crayon Experiment Continued* Remind the students that yesterday they each had a crayon. Now they don't. Is there a way to share the giant blue crayon we made? Cut the giant crayon apart so that each student gets a piece. How did we change this physical property? Make sure they understand some physical properties are changed by cutting or breaking. Ask the students if the new crayon will always stay that shape. If you use it will it remain the same shape? *If you would like to continue this, you can also have them sand the crayon or make texture drawings to explore other ways the physical properties can change.	

A	*Properties of Matter Video* Watch "Properties of Matter, Part 2" through Discovery Education (17:00). Discuss any insights. **Day 10: Making and Baking Playdough** *Playdough-Materials Needed* ½ cup of salt for every 2 kids ½ cup of water for every 2 kids 1 cup of flour for every 2 kids food dye 4 by 4 square of wax paper	
A, M	*Making Playdough* Today the students are going to explore matter that changes when it is heated. Mix the first three ingredients together and add food dye as needed. Give a portion to each student and have them write and draw what they see and feel. Remind them to describe the physical properties and label their picture. What state is the matter in now? Can they fold it? Can they easily change the shape? Then, have the students manipulate the playdough into their favorite shape. *Baking Playdough* Explain that you are going to heat the playdough after school. Based on what they know, why do they think will happen? (The soft, solid playdough will turn into a hard, solid). Look on the internet for baking directions. Ask your school cafeteria for oven use.	
M	**Day 11: Making Pudding (Mixing Solids and Liquids)** *Discussion on How Heat Changes Matter* Show the students the playdough creation they made the day before. How did it change? Can we still easily change the shape? Heat has changed the physical properties of the matter. *Pudding Materials* 4 boxes of instant pudding containers to make the instant pudding milk water	
M, T	*Making Pudding* With the students gathered, make the instant pudding. Discuss how the solid pieces mixed with the liquid and became a liquid. What do they think will happen when	

	the liquid is cooled? Place the pudding containers in the fridge.	
M	*Science Journals* While you are gone, have the students answer this question in their Science Journal. Do all solids dissolve in liquid? Why or why not. Once they have answered the question, let them share their thoughts with the group.	Science Journal Entry
M, T	*Mixing Liquids and Solids Groups* Teacher will divide class into four groups. Each group will need the following supplies: 1 box of jell-o/salt/or sugar Fruit Loops Raisins Sand 4 cups filled half-way with water Group will mix each of the solids into a cup of water: Jell-O, fruit loops, raisins, and sand. With their group, have them make a hypothesis explaining if their solids will dissolve with the liquids. Perform the experiments. Gather the students to share their observations.	
A	*Systems Discussion and Pudding Eating* Go check on the pudding and serve it to the class. While they snack, write the word System on the board. What is a system? Systems are separate parts that come together to perform a function they could not perform separately. Give some examples. **Day 12: Paper Helicopters and Systems** (adapted from TAKSCOPES) In this activity, students will be looking how things can be done to materials to change their function and physical properties. They will also come to understand that a system is anything made up of parts and if part of a system is missing, it does not function properly. *Paper Helicopters Materials* -note card folded down center (horizontally) and then cut vertically at top half and folded to create "propellers" (two per group) -scissors -paperclips (two per group) *You may also refer to this paper helicopter using the FOSS KIT-Forces and Motion	

M	*Paper Helicopters Activity* 1) Make two paper helicopters. 2) Hold one of the paper helicopters above your head and release it. What does it do? How does it move? 3) Add the paper clip to the bottom so that it creates a weighted axis. What happens when you release it now? Did it function in the same way? 4) Now carefully use the scissors and cut off the propellers of one of your paper helicopters. What does it do? How does it move?	
M	*Paper Helicopter Discussion* Discuss what was learned by adding/removing parts of your "Paper Helicopter" system. Make sure that the students understand that a system does not function properly and/or can function in a new way when adding/removing parts to a system.	
M	*Click pen Activity* In this activity, once again you are addressing the fact that when materials are combined they can do things that they cannot do by themselves. 1) Have students/groups observe a click pen. Then they will take it apart. 2) In their science journal/sheet of paper, have students draw the parts of the click pen. Can they figure out what each part does? Discuss if this click pen would work if one of its parts were missing.	
M, T	**Day 13: Matter in the World Around You** *Matter in the World Around You* Divide the class into groups. Give each group a white board to hold their thoughts. Ask the students how many different ways they see matter changing in the world around them. Have them brainstorm together and document their thoughts on the whiteboard. Their thoughts need to be labeled clearly. Each time they have a completed thought, they can raise their hand for you to evaluate their white board. If they successfully came up with one, give them a unifix cube. The group with the most cubes wins!	Whiteboard Idea Generation

M	*Matter Check-In (Post Assessment)* When they have finished this review, give them the Matter Check-In sheet for the final time. This is their chance to let you know exactly what they have learned in this unit. Based on the class, the teacher can either give a fresh Matter Check-In sheet or give them the original sheet to make changes.	Matter Check-In
M, T	*Performance Assessment* Introduce performance assessment by reading the options and going over the rubric (U and S+). Explain to the students that tomorrow they will start their projects and they will have two days to complete them.	
M, T	**Day 14-15:Performance Assessments** Begin and complete performance assessments.	
	Suggested Homework Assignment *What's In My Bag?* Send students home with a brown paper bag and a note card. Instruct students to choose one object from home and place it in the bag. On the notecard, have students write three clues about the object's physical properties. The next day, students will go around the room and hypothesize what is in their classmates' bags. After 10 minutes, students will reveal the contents of the bag.	
	Suggested Supplemental Lessons *Guest Speaker* Invite an architect to talk to your class about using materials/matter to change things or build things. They can discuss how different types of liquids, solids, and gases help them construct their models. They can discuss how the different parts of matter work together as a system.	
	Suggested Resources: 1. TAKScopes (Subscription needed) 2. Thinkfinity 3. FOSS KIT 4. Brainpop, Jr. "Solids, Liquids, and Gases" (4:13) "Changing States of Matter" (5:54) 5. KLRN/Discovery Education Videos for K-2: "Properties of Matter, Part I" (20:00) "Properties of Matter, Part II: Solids, Liquids, and Gases" (17:00) "A First Look at Solids, Liquids, and Gases" (17:00)	

	ATTACHED: Matter Check-In Classifying Matter Sorting Stations Matter Vocabulary Sorting Cards Measuring Mass GoGurt Experiment Sheet Matter Matters Outline Matter Invention Outline Matter Matters Rubric Matter Invention Rubric	

Name: _____

Matter Check In

1. Why does classifying matter help us learn about the world around us?

_____

_____

_____

_____

2. How do changes in matter affect our everyday life?

_____

_____

_____

_____

3. Why is energy important?

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_____

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_____

4. How do materials work together?

_____

_____

_____

_____

Classifying Matter

Measuring Mass

Unit of measurement_____

Name of Object	Mass

Sorting by Shape, Texture & Flexibility

Shape Texture Flexibility

Circle one way you sorted the objects and draw it below. Be sure to label your sort.

Measuring Temperature

Water Cups	Temperature in Fahrenheit
Ice Cold Water	
Tap Water	
Warmed Water	

Brainpop, Jr. Video

Watch the Brainpop Jr. video on Solids, Liquids, and Gases. Listen carefully and then take the quiz (EASY or HARD).

I took the EASY or HARD quiz.

(circle one)

1.
2.
3.
4.
5.

Solid	Matter that keeps its shape
Liquid	Matter that can flow and take the shape of its container
Gas	Matter that spreads out to fill an entire container
Matter	What makes up all things
Mass	The amount of matter in something

Change	To become different
Observe	To watch
Size	How large or small something is
Length	How long an item is
Melt	To change from a solid to a liquid

Physical Property	Things you can see or measure on an item
Combine	Mix together
Parts	The pieces of a whole
Shape	The outline of an object
Flexibility	How easily an object can bend without breaking

Temperature	The measurement of how hot or cold something is
Texture	The feel, look and thickness of a solid or liquid
Heat	A higher temperature
Energy	Power; the ability to make change

Name: _____

Measuring Mass

Object: _____ Mass: _____ Unit of Mass: _____	Object: _____ Mass: _____ Unit of Mass: _____
Object: _____ Mass: _____ Unit of Mass: _____	Object: _____ Mass: _____ Unit of Mass: _____

GoGurt Experiment

Questions: What are the observable differences between solids and liquids?

Physical Properties	Unfrozen GoGurt	Frozen GoGurt
Size		
Shape		
Mass		
Temperature		
Flexibility		
Texture		

Thinking about this experiment and comparing the two forms of GoGurt, answer the following questions:

Is the ***unfrozen*** GoGurt a solid or a liquid? Justify your answer.

Is the ***frozen*** GoGurt a solid or a liquid? Justify your answer.

Matter Matters

In the box below, draw a picture of an everyday activity. Make sure to label your picture.

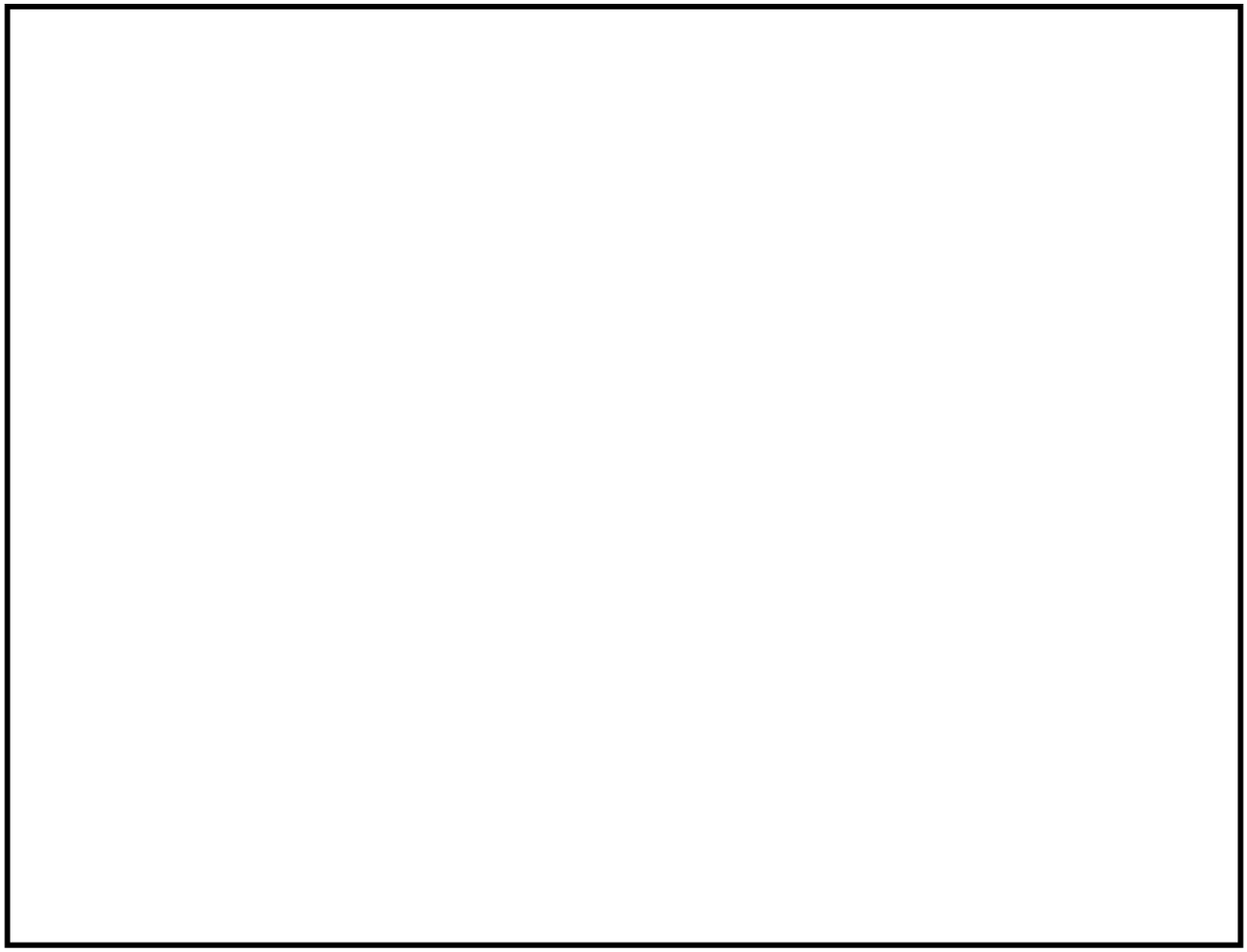
Name of Activity_____

Choose at least 5 of the parts from your picture and identify its state of matter.

Name of Part	State of Matter (solid, liquid or gas)

Write about the physical changes (cutting, folding, sanding, melting) that take place during this activity.

Take one of the parts away from the activity. Can this activity still take place? Can this activity still function? Explain your answer.



Matter Invention

In the box below, draw a picture of an everyday object. Make sure to label all of the parts.

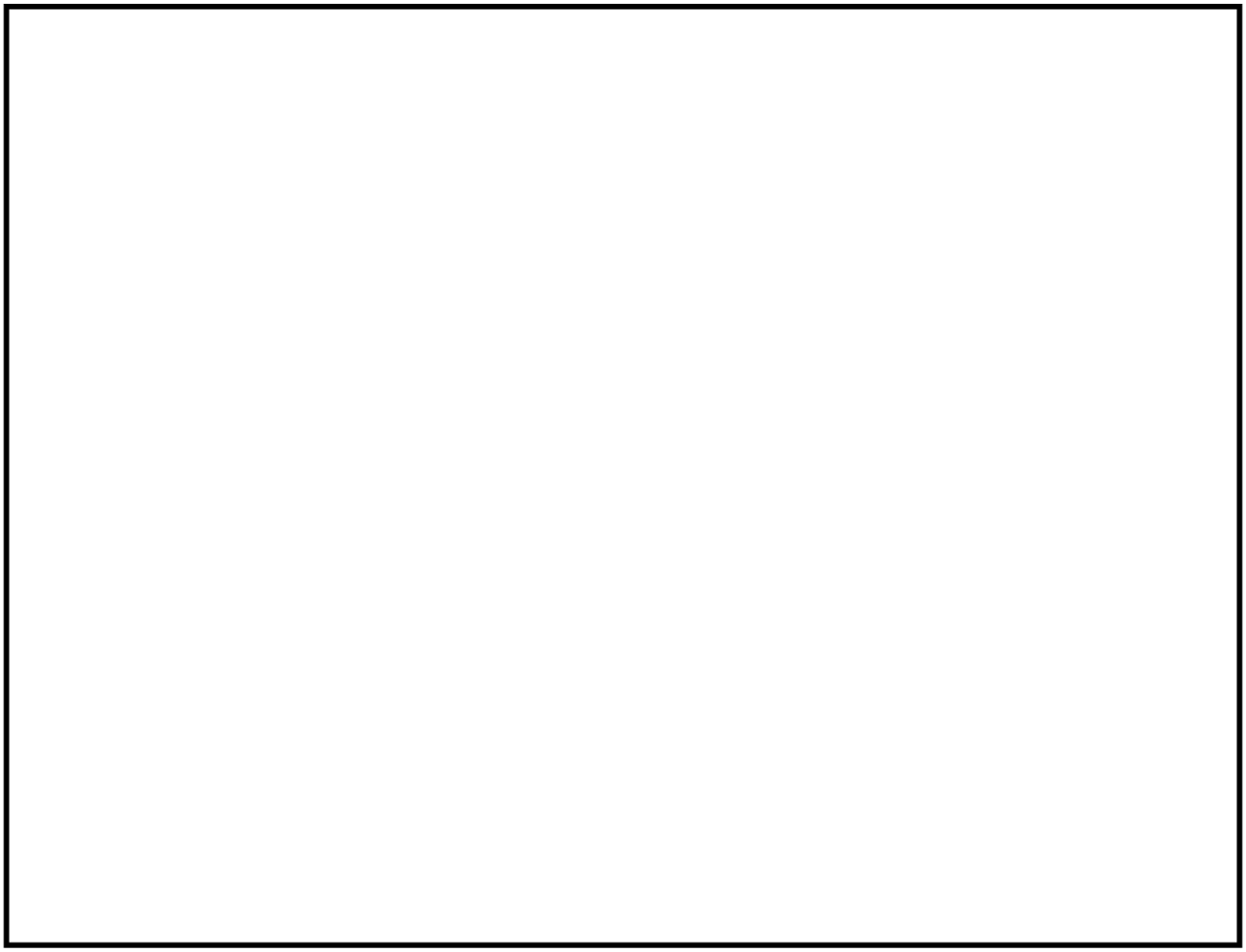
Name of Object_____

Describe the properties of this object and how it is used. Fill in as many as possible.

Shape	
Mass	
Temperature	
Texture	
Flexibility	
Solid, liquid or gas	
How is it used (purpose):	

Change your object in some way so that it serves a different, useful purpose. Draw your new "invention" below and be sure to label the parts.

Describe how you changed your object. What is its new function? What did you add or take or take away to allow it to function in a new, useful way.



Name: _____

Matter Matters Rubric

	Presentation/Work Ethic	Identify States of Matter	Identify Changes in Matter	Identify Parts of the Activity	Understood Systems
U	I did not work on my project. It is not finished.	I did not identify matter or did it incorrectly	I did not identify a change in matter.	I did not identify parts of my activity.	I do not know what a system is.
N	I used part of my time to work but I played often. My project is sloppy.	I identified 1-4 states of matter.	I identified 1-2 changes in matter.	I identified 1-2 parts of my activity.	I named one part to take out of my system.
S	I used most of my time to work. Sometimes I would play. My project looks nice.	I identified 5 states of matter.	I identified 3-4 changes in matter.	I identified 3-4 parts of my activity	I named one part of my system to take away and quickly explained the result.
S+	I used most of my time wisely. My project looks like second grade work.	I identified 5-9 states of matter	I identified 5 changes in matter.	I identified 5 parts of my activity.	I named 1 part of my system to take away and fully explained the results.
E	I used all of my time wisely. My project looks like third grade work.	I identified 10 or more states of matter.	I identified more than 5 changes in matter.	I identified more than 5 parts of my activity.	I named and explained several parts. I fully understand systems.

Matter Invention Rubric

	Presentation and Work Ethic	**Describing Your Object**	**Changing Your Object**	**Usefulness of New Object**
U	I did not work on my project. My work is not complete.	I chose an object.	I did not change my object.	You cannot use my new object.
N	I worked on my project a little bit. I played a lot.	I chose an object and drew it.	I changed my object but I am not sure what it is.	I can come up with a job for my object but it doesn't make sense.
S	I worked on my project for most of the time but it has some errors.	I chose an object and drew it very clearly. I used some labels and description.	I have changed my object. I described and drew my new object.	My object needs other parts to complete its job.
S+	I worked hard on my project and it looks like 2nd grade work.	I chose an object and drew it very carefully. I have labeled and described most parts.	My new object is unique and creative. I took my time with my drawing and descriptions.	My new object has a clear job and can easily serve its purpose.
E	I worked very hard on my project and it looks like third grade work.	The drawing of my object is a work of art. I have labeled and described every part.	My new object is very unique and creative. I have clearly drawn and described my new object.	I have created a new invention and it performs its job flawlessly!